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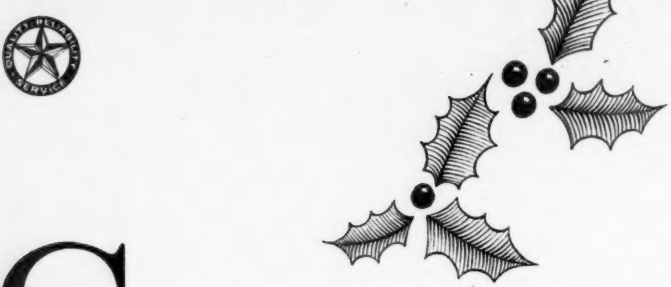

Season's Greetings

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There can be no approach to truth without some threat to the thinker's personality. —Wilfred Trotter, *Vet. Rec.*, 15:43.

* * * *

Human life is far more secure than it was half a century ago. In that brief period of history cholera and plague and typhus have practically disappeared from civilized countries. Deaths from diphtheria and typhoid fever have become rare in many communities. The tuberculosis death rate has been reduced to one-fourth of what it was. The total death rate in our cities has been cut in half.

* * * *

Rat-bite fever is widely distributed over the world. Perhaps the disease is more common than is generally recognized. Many people die after the bite of a rat without a definite diagnosis. Neel reports that, after the clinical entity had been called to the attention of the local medical profession, five cases were diagnosed in one county in South Carolina during 1929. The history of a bite by a rat is usually given. Cases caused by bites or scratches of other animals have been reported. A case of rat-bite fever occurred in a second-year medical student at the University of Chicago. He was infected while performing an operation on a dog, a hazard to which veterinarians are constantly exposed.

From 1893 to 1932, medical literature contained 34,000 articles on tuberculosis. Therefore, an average of more than two articles per day were published during this 40-year period on the subject of tuberculosis.

* * * *

Bovine tuberculosis is responsible for more than 2,500 deaths annually in Great Britain, and for a still greater amount of serious illness. Undulant fever is rarely reported in Great Britain, but possibly it often passes unrecognized. About 100 outbreaks of epidemic disease, due either to mastitis in cattle or to subsequent infection of milk by those handling it, have been recorded in Great Britain since 1903. The most important outbreak occurred at Hove in 1929, when 1,000 families were affected and sixty-three deaths occurred.

* * * *

Where vaccination is general, smallpox has become a rare and mild disease of children. This is not due to any change in the germ. There is a mild strain of smallpox which is the common form in the United States; but the old-fashioned virulent form still occurs. Vaccination—and vaccination alone—has given us the power to control and, whenever we desire to do so, to eradicate this once dread disease.

Mass production was a familiar idea to Roman industry 2,000 years ago.—*S. N. L.*, 28:762.

Poultry men are now told how to feed hens so as to produce lighter yellow or darker orange egg yolks.—*S. N. L.*, 28:762.

Texas longhorn cattle, now rare, enjoy protection with big game animals on the Wichita game preserve in Oklahoma.—*S. N. L.*, 28:762.

Serum treatment has reduced deaths due to snake bite in the United States, from over 14 to less than four per cent.—*S. N. L.*, 28:762.

Dilaudid in doses of 1/20 grain is much more effective and pleasing than the equivalent dose of morphine, grain 1/4, in cystoscopic examinations. The patient does not experience pain to any noticeable degree, neither does he complain of vertigo.—*Clifford M. Bassett.*

The drug dilaudid is a morphine derivative, dihydromorphinone hydrochloride, a rearrangement of the morphine molecule. This change in chemical structure of the morphine molecule increases the analgesic effect about five times, appears to remove the constipating effect and also seems to eliminate much of the euphoric effect of morphine. The nauseating and emetic effect of morphine are almost entirely absent.—*Clifford M. Bassett.*

During the last 75 years the physician has been given tools to use in pain relief by the remarkable development of new chemicals and the study of their properties by pharmacologists. Various analgesic drugs have been offered and studied with an idea that opiates might possibly be eliminated, but now, as in the early days of medicine, opium, its analgesic alkaloids and derivatives of these alkaloids still appear to be the most effective clinical pain relieving agents.—*Clifford M. Bassett.*

Liver extract injected into the muscles can check the eruption of small pox at any stage of the disease, shorten the usual length of its course and prevent the development of pustules and the consequent scarring and pitting, as well as improve the general health of the patient.—*S.N.L.*, 28: 755.

MASTER HORMONES

All indications point to the pituitary as the fountain head of the system from which issue the master hormones which initiate and control the great physiological functions of growth, reproduction and nutrition. These hormones have the power of both stimulating or inhibiting the action of minor hormones and enzymes in the other glands of the system, and thus maintain equilibrium. No subordinate hormone of a minor gland can function without the fundamental action of the master hormone. Destruction of the pituitary by hypophysectomy causes cessation of action of all minor hormones with atrophy of the glands producing them. One exception alone is recorded in the case of insulin, which increases markedly following hypophysectomy, and this casts a doubt upon the question of whether insulin is a subordinate hormone, or whether it is not rather an enzyme like amylase, which we know may be influenced by hormones although it is not one itself.

Five master hormones are recognized by Evans and eight by Smith. Upon the existence of these chief hormones depends the functioning ability of the subordinate hormones of the minor endocrine glands; thyroxine in the thyroid epinephrine and cortin in the adrenals, the follicular and luteinizing hormones in the gonads, an unnamed hormone in the parathyroids, and many minor hormones such as secretin and duodenin of the duodenal mucosa. Insulin is purposely omitted from this list.

These subordinate hormones act upon enzymes, increasing or decreasing their action. By these means the metabolisms are controlled and equilibrium maintained.—*Geo. H. Tuttle*, in *Medical Times*, 63:11.

We can scarcely bring ourselves to listen to anyone who is not actually engaged in investigating facts and to call an author speculative, is a severe censure.—Wilfred Trotter, *Vet. Rec.*, 15:43.

* * * *

The scientific worker among other qualities, must have an especially severe standard of evidence and proof; he must draw no conclusion that is not strictly justified by the evidence, and he must be content to leave in suspense any decision for which the materials are not quite complete.—Wilfred Trotter, *Vet. Rec.*, 15:43.

* * * *

It has been repeatedly proved in Maryland that 80 to 85 per cent of the primary outbreaks of hog cholera are caused by feeding cholera-infected bones and pork trimmings to hogs in garbage or kitchen refuse; about 5% are caused by the purchase of new stock that have been exposed to the disease, and about 5% are caused by permitting roving sick hogs on the premises. Dogs, buzzards, trucks and men's shoes may carry the infection from one hog to another, but these are of minor importance.—*Mark Welsh.*

* * * *

DOG REGISTRATION INCREASES 33⅓%

American Kennel Club breed registrations for the first nine months of 1935 were 52,592, according to *Dog World.* Registrations for the same period in 1934 were 41,150. It is estimated that the complete registration for 1935 will reach 70,000, an all time record number.

Bostons (7,975) still retain first place in number as this breed has done for many years. Cockers with 6,414 registered, are second; Scotties (5,265), third; wires (5,263), fourth. These breeds, together with the Beagle (3,146), Peke (3,033), Chow (2,695), Springer (2,087), Pom (1,434) and Bull dog (1,263), total 73% of the total registration, the remaining 88 breeds furnishing but 27% of the registrations by the A. K. C., January to September inclusive, 1935.

The reasons for inspecting meat that enters into foreign and interstate trade are equally valid for the inspection of that which figures only in intrastate trade. Assuming that meat inspection has public health value, one, even a veterinarian, might mildly suggest that the jurisdictional disputes of the political scientists and practitioners be settled as soon as possible because the human meat eater is anatomically and physiologically unable to discriminate between the pathological and toxic effects of meat slaughtered for intrastate consumption and that slaughtered for foreign and interstate trade.—*Ward Giltner.*

* * * *

THE USE OF THE STAMP IN MEAT INSPECTION

The suggestion, brought forward at the recent Congress in Belfast by Lieut. Col. Dunlop Young, that all home-killed meat should be inspected and stamped, is one to which our public health authorities should give earnest consideration, as if made law, it would do a very great deal towards establishing a supply of reliable food; the stamp marks on which would be a Government guarantee of the purity of the article. England is a long way behind Continental countries in this respect, for with all of them the public abattoir system is universal—and this infers a proper and very thorough system of inspection. The presence of the official stamp is the hallmark of an efficient system of meat inspection, and it must follow as a matter of course that the properly trained veterinary surgeon is the proper man to effectually supervise and control such inspection on behalf of the health of the public.—Edt., *Veterinary Journal,* 91:9.

While important countries of continental Europe already have and Great Britain is contemplating the establishment of a complete system of meat inspection, in this country our Federal meat inspection, the most efficient of any in the world, is being cut into by official exemption of slaughterers from the requirement of inspection for meat and meat products going into interstate commerce.

Veterinary Service—Professional or Non-Professional

The hostility of VETERINARY MEDICINE toward quackery is as acute as its chauvinism toward a good veterinary service is incurable. No one can doubt where VETERINARY MEDICINE stands on the basic questions concerned in the building up of the kind of veterinary service this country needs. It does not believe in whispering campaigns where open declarations are apropos. That it gets little help from others does not matter. It is opposed to a veterinary program that makes as many animal doctors as there are owners of animals. Our veterinary educational system does not provide a place for the recipients of its doctorate degrees. Whatever status they have attained in private or public life is of their own making. The veterinary service created for the American people is divided into two disconnected divisions: research and education. They run at cross purposes. We believe that agriculture has wanted the kind of guidance in the conduct of its veterinary service that only the veterinary profession can supply, but that the guidance it has had has been faulty. Federal and state legislation in behalf of agriculture has always leaned toward scientific programs and lavish appropriations have been made to carry them out. In the case of veterinary medicine, the appropriations were expended in developing home treatment for animals instead of training specialists who would constitute the personnel of a profession. Agriculture was badly coached by the veterinarians selected to develop a veterinary service. VETERINARY MEDICINE wants the gap between research and practice filled with a flourishing profession, not with pamphlets on horse and cattle doctoring. A better knowledge of the American veterinary set up, its origin, its trend and its probable destiny, may lead to a program of reform that will save clinical veterinary medicine from perishing; without it the outlook is not hopeful. These are unpleasant things to say but it is important to say them because so few veterinarians have ever really comprehended the underlying cause of their daily troubles.

So many examples of official promulgation of the every-man-his-own-animal-doctor plan have been given in these pages that additional citations must appear supererogatory; but since some appear to think that the evil is indigenous only to the Corn Belt, we append an account of three instances from the Atlantic seaboard and a fourth from an adjoining state.

Every Monday, *The News and Observer,* published at Raleigh, N. C., by the Hon. Josephus Daniels, former Secretary of the Navy, gives a page to recounting the activities of county agents in that section. The following quoted from the "Observer" of July 22nd and of August 5, 1935, are examples of such activities:

PASQUOTANK COUNTY: Assisted Jacob Riddick, Archie Riddick, Rural Riddick, Oliver Riddick, William Brite in vaccinating 70 hogs against cholera. The disease had made its appearance in the community and vaccination was used to prevent it from spreading through Mt. Hermon township.

In an effort to prevent additional loss in turkeys from fowl typhoid, assistance was given Messrs. Jimmie Temple, W. K. Jones and Drew Sawyer in vaccinating 36 birds.

Assisted Joseph Temple, Charles Temple, W. E. Temple, Dick Sanderlin and Willie Kite in vaccinating 15 mules against staggers which has been prevalent in work stock in this section this summer.—G. W. Falls, County Agent.

NASH COUNTY: Mr. C. J. Maupin spent one day in the country visiting three demonstration poultry flocks in regard to vaccinating pullets for chicken pox and roup. Made a number of examinations in these flocks to see if the vaccination had been successful. These three flock owners have vaccinated in the neighborhood of 800 pullets with very successful results.—H. G. Wharton, County Agent.

PASQUOTANK COUNTY: Mr. C. J. Maupin, extension poultry specialist, returned Tuesday and Wednesday to make inspection of birds vaccinated

against pox last week. We found excellent takes in each flock.

There have been scattering reports of dogs and domestic stock having rabies, therefore, received call from Messrs. Reg. Gregory, H. W. Lynch, T. W. Aydlett, I. B. Parker, and W. H. Creef to assist in vaccinating 16 dogs against rabies.

Have completed delivering first payment consisting of group 1 corn-hog contract signers, amounting to $7,631.70.—G. W. Falls, County Agent.

Sore mouth is developing rapidly in this section among horses and cattle, with many cases of it now, reports County Agent W. N. McClung, to whom a number of cases were reported Saturday morning.

Treatment is simple and inexpensive he says, quoting Veterinarians J. H. Reitz and H. H. Newton, of the State staff of specialists. They make the following recommendations:

Sore mouth is a fungous disease. The first step is to keep diseased animals off pasture and rough feed, to prevent further irritation.

Feed affected animals soft, nourishing feeds: bran mashes and such.

Syringe the mouth of affected animals twice daily with salt solution, made by dissolving one level tablespoonful of ordinary table salt in one pint of water.

About fifteen minutes after washing mouth with salt solution, place one teaspoonful of boric acid powder on the tongue, in dry form.

PREGNANCY DISEASE OF EWES

The feeding and management of flocks during the breeding season are important factors in the control and prevention of pregnancy disease of sheep. Treatment of affected animals is of little avail. Adequate rations and abundant exercise, however, are effective in prevention. Management features are essential in fat as well as in thin ewes. Each flock presents a separate problem in prevention. A good pasture is a natural environment for sheep. On pasture ewes automatically get exercise and succulent feed which acts as a mild laxative. In the absence of pasture, roots and cabbage are worth while. Technical Bulletin 261 of the North Dakota Agricultural Experiment Station, Fargo, North Dakota, presents a complete discussion of this important subject. Veterinarians will find it practical to encourage flock owners to practice preventive methods.

OUR GUESSING VETERINARY SERVICE

IN 1858, an agricultural report stated that from 30 per cent to 80 per cent of all the hogs in New York, Pennsylvania and Ohio died of cholera. For 1877, the same report set the total loss from hog cholera at $100,000,000. A report dated 1895 gives the losses from hog cholera in Nebraska as $31,000,000. When one digs into the little hidden corners of veterinary history, one finds amazing things among them amazing figures and amazing statisticians, sometimes quite amusing. The figtures are just guesses and the figurers guessers, since there never has been a veterinary service in any of these states well enough organized to put even good guesses on the adding machine.

Readers are urged to ask where and by whom the figures were garnered when veterinary vital statistics are quoted to them. We are curious to know. A prominent figure in the Federal service said the other day that "you can't put out a fire until you know where it is." Except for Bang's disease and tuberculosis, nobody can do more than guess at the location of animal disease in this country or its amount. And there is a very human tendency among guessers to make the guess serve the purpose of the guesser.

THE Eastern Iowa Veterinary Association has shown that records of animal morbidity and mortality are not unattainable. Through the cooperation of its members, such records have been collected in its territory for a decade. They are not complete, since the facts must be supplied by volunteers, but they are not guesses; so far as they go they are dependable. Were the national veterinary association to perform the same service for the whole country, data of inestimable value to animal husbandry and important to the veterinary profession could be assembled from them. Perhaps also—just perhaps—the public veterinary service would be spurred into substituting statistics for guesses in official reports of the occurrence and prevalence of animal disease, and of losses incident thereto.

Control of Rabies

THE leading editorial in a recent issue[1] of the *Journal of the American Medical Association* is entitled "Control of Rabies." The article, an excellent treatise on the subject, is divisible into three main topics:

1. The increasing incidence of the disease in animals and man.
2. The laxity of law enforcement.
3. Recommendations.

It points out that "bites by animals are not uncommon today," and quotes from a recent report[2] of the situation in New York City, showing that 20,416 persons were bitten by animals in that city in 1934. All, except approximately 1000, were dog bites. The survey shows that the increase in the number of cases of rabies has been constant since 1908, and that during 1933 there were 65 fatalities from human rabies in the registration area (less than the whole) of the United States.

IN REGARD to the laxity of law enforcement, as Merillat[3] emphasized before the A. V. M. A. at Oklahoma City, the medical profession is beginning to wonder why there is no veterinary service to attend to such matters, and as to the recommendations made in this outstanding voice of the science of medicine, isn't it a "pretty kettle of fish" that the medical profession is prompted to set down recommendations on the control of a disease of animals? Unfortunately, the veterinary service is not well enough organized to furnish the regulations, means of enforcement nor the statistical records required; but stands by, in a haze of mental paralysis watching another profession step in to annunciate the *modus operandi.*

NO ONE has the faintest conception of the number of cases of rabies in animals that occur in this country yearly. Even the records of health departments in our largest cities are woefully incomplete, since there are no systematic measures in use for reporting this disease except in man. In looking into the rabies situation the other day, the office records of a Chicago veterinarian were examined. This clinician conducts a fairly large, but by no means extensive, practice. His practice is probably about an average one for this city. The record showed that 17 cases of rabies were presented at his hospital for treatment from February to September of this year. In addition, he states there were a number of others, not of record, disposed of at the owners' homes. The disease, he declared, is becoming so common in Chicago that practicing veterinary medicine is now precarious to the doctor and his attendants owing to the insidious prodrome of the disease. A lesioned finger keeps the small animal practitioner in a state of anxiety. A questionnaire sent to all veterinarians practicing in the Chicago metropolitan area 19 years ago and answered by a majority of them, indicated that from 1912 to 1916, the number of cases they saw yearly averaged 1800. These estimates, of course are just guesses, like the "statistics" in annual reports. Their contrast with official guesses, however, is startling.

Seventeen cases of rabies multiplied by 120 (the number of veterinarians in the Chicago area) equals 2,040 for seven months of 1935. Presuming that at least five persons contacted each case, over 10,000 persons were exposed to rabies in that area, or at a rate of over 17,000 annually. The height to which the figure would reach for the whole United States is not known, but the fact remains that in 1933, 65 American families went through the terrifying experience of watching a member suffer and die from this, the most dreaded among human afflictions, while the veterinary service to which the public should turn for relief, stands by in the anesthesia of innocuous desuetude, unwill-

[1] Journal of the American Medical Association, 105:18, Nov. 2, 1935, p. 1432.
[2] Olesen, Robert. Public Health Reports, 50:1087, Aug. 16, 1935.
[3] Merillat, L. A. Journal of the A. V. M. A., 40:4, Sept. 1935, pp. 271-90.

ing or unable even to promulgate a plan of action. In addition to the families in which deaths from rabies occurred, probably a hundred thousand other families (possibly 200,000, nobody knows the number) went through the ordeal of having a member take the Pasteur treatment, by no means a negligible matter.

WHETHER the victim of rabies is a human being, a dog, a cat, a horse or a cow, the scene is forbidding. No ailment of mammalian life is its equal in grueling agony. It is pitiful to the thoughtful veterinarian that the service he represents in the social cadre is so poorly commanded that the medical profession in a leading editorial, in its leading spokesman, feels obligated to point out measures that should be taken for the handling of a disease, solely of animal origin.

GRANDDAD'S WAYS

Ancestor worship is not usually considered an American custom, but many of the farm practices of bygone days are still carried on in ritualistic form. The wooden plow and cradle of Grandpa's day can seldom be found except in a museum, but often the old gentleman's methods of raising stock are still used. Mystic properties are still attributed to soapy dish water in the hog's diet. Yet, if there is sufficient soap used to cut the grease on the dishes, it can't do the delicate intestinal linings any particular good. That uncertain mixture of husks, rinds, peelings, food scraps and wash water, known in the old days as "swill," is still thought of by some as a necessary part of the pig's ration. Actual feeding tests, however, show that about 50 pounds of this material together with the flies and smell that accompany it, are necessary to produce one pound of pork. Ordinarily, this mixture would be of little good or evil as far as the hog is concerned, except that occasionally trimmings and wash water from cholera-infected pork finds its way to the hogs in the kitchen refuse. Annually, more than 80% of the primary outbreaks of hog cholera in Maryland are started in just this way.—*Mark Welsh.*

DISEASES OF ANIMALS AND HARD TIMES

THE many wealth-sapping diseases that have become deeply rooted in our ten-billion-dollar livestock in the United States constitute an important economic problem, inasmuch as 80 per cent of the total income of American farming is derived from domestic animals and farming is conceded to be a basic American industry. It is upon these postulates that the veterinary service must be erected, since disease is now the primary obstacle to success in animal production. Philosophizing from the bare facts in sight, Socrates would have declared that in the control of diseases among its domestic animals, lies the future of the American Republic. But philosophy and statesmanship seldom work in double harness. The latter gives the lethal cup to the former and goes blundering on.

The American farmer, since the colonial days, has never enjoyed the blessing of a managed animal conservation service and as a consequence has stood the brunt of sweeping plagues, creeping contagions and sporadic affection galore while statesmen exploited the control of these stealthy destroyers of national wealth and happiness for personal aggrandizement.

HARD times will never be permanently eliminated from the United States until statesmanship comes down to the prosaic job of preventing the hundreds of millions lost each year through the drain of preventable diseases of live stock, a job that has never been intelligently undertaken. A program of animal disease control operated properly under central direction with the mobilized talent of the nation would require but an insignificant part of the national budget and paradoxical as it must seem to the thoughtless, it would do more for the American people than all the AAA's, PWA's and FERA's combined; for be it repeated disease is the limiting factor in animal production and without a successful animal industry agriculture must languish and factories experience idle periods.

The Farmers' Losses From Diseases of Animals

THE losses suffered by American farmers from diseases of animals are tremendous. No one has ever troubled himself to find out how great. The police work in such matters is sacredly preserved by the states where classical veterinary medicine isn't much to write home about, even as we approach the fifth decenium of the twentieth century, *Anno Domini*. Except when the Federal government carries out a project against a disease systematically, the incidence of diseases among domestic animals is just one great sea of unknowns—and not much will or can be done about an unknown.

ON the incidence of Bang's disease, the Federal government has recently furnished some revealing figures just as it also brought out revealing figures on bovine tuberculosis, one-time Nemesis of organized agriculture. Among the 3,317,780 cattle tested for Bang's diseases under Federal supervision during the year ending June 30, 1935, 1,476,619 were included in the "Containing-infection" column of the official report. In two of the principal dairy cattle states, the same report shows 1,111,-081 tested with 589,542 in herds containing infection. Naturally, the percentages written into the report for the different states participating in the control program vary, yet the figures show that nearly one-half of our dairy cows is either infected with Bang's bacillus or in herd contact with it. Just another pretty kettle of fish!

GRADUALLY, it is being brought out that the "owner-doctor" plan of veterinary medicine adopted by the states in the days of archaic quackery hasn't worked. Wherever the truth about the incidence of disease among American domestic animals has been exposed through interventions of the Federal veterinary service, the situation has not been complimentary to the related services in the states, where most of the money appropriated for research and livestock sanitary police work is spent.

THE situation is comparable to the panicky state in the 1870's which made imperative the founding of private veterinary colleges to modulate the continuous disaster confronting the farming industry through the high incidence of animal diseases and the impotence of the "owner-doctor" plan of the state governments. Are the states not paving the way for another era of private veterinary colleges? Already, we have them in a small way, but unfortunately they, like the public research station, have adopted the "owner-doctor" plan and indulge not only in research and education but also in profitable biological and pharmaceutical production, a field that the former private veterinary schools did not cultivate.

Judging from their expanding physical equipment and the qualifications of their personnel, these institutions have become something to reckon with. And, who can stop them until the public service abandons its owner-doctor plan, which has a record of failure 75 years long, and amalgamates with the graduates of the veterinary colleges for mutual protection? The tremendous losses suffered by farmers from diseases of animals are not likely to be curtailed until this amalgamation is accomplished. Whether these private research-educational-production institutes or the public ones are the greater potential menace to legitimate clinical medicine is a debatable question. From our viewpoint both are traveling along the wrong path. The record supports no other view. Sound medicine can condone neither.

Wholesale Doctor Production

THE notion that teaching medicine to farmers constitutes a sufficient system of disease control among domestic animals was obnoxious to the intelligentsia of all countries even before the founding of veterinary colleges in the eighteenth century. The need of specialists to practice the art of animal medicine was recognized and provided for more than 30 centuries ago, and ever since, governments have delegated that mission to trained persons of which the *equarius medicus* of the Greco-Roman Empire, the *beiter* of the Arabs during the Middle Ages, the *ecuyer* and *marechal* of the French during the renaissance were examples. Four years (1765) after the first veterinary school was established, the King of France granted the right to issue diplomas to students "who had diligently pursued their studies on diseases of animals," in the newly-established schools (Lyon and Alfort), the declared purpose being to create a protected occupation for them.

AMONG the Occidental nations of that period, Great Britain, which was more industrial than agricultural, did not entirely follow the example, but soon (1791) established systematic veterinary education under private control; giving it royal sanction a half century later. It remained for the United States, 60 years later, to start out on the strange program of making animal doctors at wholesale by means of chairs in agricultural colleges and subsidized use of the mails. During the first 25 years (1850-75) of this "owner-doctor plan," the system had full sway. While the college trained veterinarians of that two and a half decades looked askance at the queer departure, they were too few in numbers and too scattered to turn the trend in the right direction. But, after watching animal diseases sap prosperity from the farming industry beyond all reason, they established private schools (1875) in the attempt to set matters right.

BEGINNING ten years after the first viable school was on its way and continuing until the American participation in the World War, the large number of college graduates who came into the veterinary field had the "owner-doctor" plan on the run. The period between 1885 and 1917 were years of prosperity and achievement for the veterinary profession. Contagious pleuropneumonia and repeated outbreaks of foot-and-mouth disease were eradicated; the cause of Texas fever was discovered, and the disease itself driven to narrow quarters; blackleg and dourine were brought under control; tetanus was prevented; local and general anesthesia came into general use; the cause of hog cholera and a dependable prophylactic were discovered; the tragedy of milk fever was largely eliminated; veterinary associations were organized and practice laws were enacted in 46 of the states; commissioned rank from second lieutenant to major was obtained for veterinarians in the army; tuberculosis eradication was planned, despite the opposition of the states; state supported veterinary schools (Cornell, Iowa, Ohio, Kansas, et al.) were transformed from nothingness to excellent institutions, and most of the states established live stock sanitary boards under veterinary direction, which made considerable progress in checking divers epizootics. The veterinary profession was prosperous, contented and going rapidly forward with the march of contemporary medicine.

Then came the World War, farm-adviser doctors and renewed momentum of the owner-doctor system, together with stagnation, quackery and a dubious prospect for the graduated veterinarians and for successful husbandry of domestic animals.

A Veterinary Centenarian

IN AUGUST last, the veterinary profession of Great Britain had the rare opportunity and the proud privilege of commemorating the 100th birthday anniversary of one of their number, Dr. Griffith Evans, M.R.C.V.S., of Bangor.

MUCH of Doctor Evans' life has been filled with adventure and his achievements in scientific research have been remarkable even for one who has been vouchsafed a century in which to achieve. Born August 7, 1835, Griffith Evans was graduated from the Royal Veterinary College (London) at the age of 20. In 1860, he was commissioned in the Royal Artillery and from 1861 to 1870 was stationed at Montreal, Quebec. While there, he enrolled in the Medical Department of McGill University and was graduated in 1864. During the Civil War, he twice visited President Lincoln in the White House and, by him, was given permission to visit the Northern Armies at the Front. This recognition by the American President preceded by half a century any material recognition from his own countrymen. On this occasion he was the guest in turn of Generals Lindley, Grant, Meade and Thomas. Unfortunately he contracted the dysentery from which thousands of troops were dying, and suffered a prolonged illness followed before recovery, by pneumonia and shortly afterward by cholera and then by typhoid fever, from which, for weeks it was thought he would not recover.

RETURNING to England in 1870, Doctor Evans continued his studies in various London hospitals. The microscope was a hobby with him. Posted to India in 1877, he was sent immediately to the Punjab to study a fatal disease of army horses at that station. The disease proved to be anthrax. He observed the development of the bacilli in the blood and even the action of the phagocytes and wrote a classic description of his findings, which however, won him only local fame. This was before the birth of bacteriology and the medical world was convinced that living organisms, if they occurred in the blood, could not be the cause of the disease but must result from an unhealthy condition of the vital fluid. It was not until seven years later than Metchnikoff won imperishable fame by his studies of phagocytes.

IN 1880, Evans was sent to Dera Ismael Khan to investigate a disease that had been fatal to horses and camels for many years. His request for permission to attempt to transmit the disease from ill to healthy animals was opposed on the ground that his mission "was to cure animals, and not to kill them." He triumphed however —the result, discovery of the first pathogenic trypanosome—now named in his honor *Trypanosoma evansi.* Recognition of this work was tardy; his superior officers (medical) scouted it. Officially, he was regarded as a crank. Fortunately copies of his record were supplied to both Pasteur and Koch, who recognized the brilliance of the discovery. Returning to England (1885) he again took up his studies and took a course in the then new science of bacteriology. Retiring from the army in 1890, Doctor Evans lectured for 20 years in the University of North Wales.

DOCTOR EVANS has received many merited honors, an award of the Distinguished Service Pension (1913), the Mary Kingsley Medal for achievement in tropical medicine (1917), The John Henry Steele Memorial Medal (1918), an honorary degree of Doctor of Science (Univ. of N. Wales, 1919) and probably most treasured of all, a scroll—a tribute from the Royal Veterinary College—presented by the Principal and Dean, Sir Frederick Hobday on the occasion of the celebration of his 100th birthday anniversary.

In responding to the presentation speech, Doctor Evans recounted reminiscences of student days at the Royal Veterinary College and of his instructors 80 years ago!

STARTLING STATISTICS

Recent statistics show that every year in this country there are over 5,000 deaths of boys and young men and 8,500 deaths of girls and young women from 15 to 25 years of age from tuberculosis. In other words, the rate of mortality for girls is 76 per 100,000 of the female population and 49 per 100,000 of the male population at these ages.

It has been found from a study of tuberculosis cases in sanatoria that only 16% were in the early or incipient stage of the disease upon entrance. The remainder were so sick that they will have to remain much longer under treatment and their chance for recovery is far less likely.

It was revealed in a recent study that 71% of the women in a group of sanatorium patients were under 30 years of age on admission; 53% of the men were under 30. Half of the women had been admitted before they were 25. Because of their youth their chance for recovery is better on the whole but when we realize that tuberculosis is a needless waste of lives— that it may be controlled and probably will be as unusual as smallpox 50 years from now, we certainly should do our part and give our children more intelligent protection.

The education campaign of the National Tuberculosis Association and its affiliated associations has gone far in making a healthier nation, with people better equipped to fight sickness. We can well afford to support them by buying and using their Christmas Seals sold annually in December—their work indeed has been worthwhile and they deserve to receive the continued help of thinking men and women.—*Elizabeth Cole.*

MEDICAL IMMORTALS

Successful progress in the fight against tuberculosis is made possible chiefly by the discoveries of these three men. Robert Koch (left) noted German research worker, discovered the tubercle bacillus and proved it was the cause of tuberculosis in 1882. Rene Theophile Hyacinthe Laennec (center) young French medical genius, invented the stethoscope in 1815. When only 45 he became a victim of the disease he did so much to help conquer. Wilhelm Konrad Roentgen (right) noted German physicist, discovered in 1885 what is probably the most important diagnostic aid in modern medicine—the X-ray.

* * * *

The practical minded Nazi government of Berlin has introduced a new feature in the handling of its dog pound. Whereas formerly after a few days in the pound uncalled for dogs were sent to the lethal chamber, now auction dog sales are held at the pound once a month. From the first the sales have been a great success. They are attended by many speculators who buy most of the better dogs for resale.

U. S. Live Stock Sanitary Association

The thirty-ninth annual meeting of the United States Live Stock Sanitary Association was held in Chicago Dec. 4-6, 1935. The program was up to the customary high standard of this association of regulatory officials and others interested in live stock. The attendance was somewhat better than for recent years, aggregating about 400.

Brief abstracts follow of the more important papers and committee reports presented at the meeting:

Parasites of Importance in Meat Inspection in North America

By Thomas W. M. Cameron, Montreal, Quebec

"Quite apart from his main functions in protecting human health and eradicating animal disease, the meat inspector can do much to advance veterinary science. In connection with parasites, he not only is in the most favorable position to report on their incidence, distribution and practical importance but he, better than anyone else, can make those studies on the pathology of parasitic infections which are so essential."

The writer pointed out that meat inspections is not new, that it antedates Christian civilization and was, in the beginning, intended as a protection from morbid conditions of parasitic origin. Parasites remained at the forefront and were responsible (Trichinella) for the establishment of our modern systems of meat inspection in North America.

Among the parasites important to meat inspection on this continent the author listed tapeworm (measles) of cattle, sheep and swine, trichinosis, liver parasites (flukes and Echinococcus), the strongyles ascaris and others.

In view of the failure of inspection to afford complete protection against trichinosis and the wide distribution of this parasite (20% of persons are infected) it is suggested that the legend "U. S. Inspected and Passed" when stamped on pork be supplemented by the phrase "Not Inspected for Trichina" as a warning to those who are tempted to eat raw pork.

Parasites in Wildlife

By J. E. Shillinger, Washington, D. C.

The Bureau of Biological Survey of the United States Department of Agriculture is the only agency in this country making a general study of diseases and parasites specifically for the benefit of wild life.

A year ago, rabbits and other small game were extremely plentiful in the Great Lakes states. The biological survey noted that there were unbelievable numbers of ticks present in these localities and predicted that most of the small game would be killed off by disease. This has happened. Small game is scarce this year wherever these ticks, *Haemophysalis leporispalustris* occur.

Another tick, *Dermacentor albipictus*, has been found in great abundance on moose in Minnesota. Mule deer in an extensive range in the Rocky Mountains has been noted frequently affected with a nematode, *Onchocerca flexuosa.*

Bubonic plague heretofore present in the rodents of the Pacific Coast region, principally California, has been found recently in ground squirrels east of the Rockies in Montana. It seems but a matter of time until bubonic plague will be distributed over the entire range of ground squirrels.

Adult worms of the *Dirofilaria* species have been found recently in muskrats. There is a possibility that these animals may be the original native host of this parasite.

Sarco-sporidiosis of wild cottontail rabbits in the eastern states is being recorded more frequently each year.

A species of small red ant, *Solenopsis molesta*, causes widespread destruction of bob-white quail in the southern states.

Screw worm infestation of deer and other wild animals has occurred in the southern states during recent years.

There is a serious lack of specific data on the parasites of wild life and especially a dearth of factual information on the life

histories of many important parasites of game animals and birds. The study of this subject should be encouraged in our veterinary colleges.

The Present Status of Infectious Equine Encephalomyelitis in the United States

By L. T. Giltner and M. S. Shahan, Washington, D. C.

These authors reviewed, briefly, the epizootiology of infectious equine encephalomyelitis from 1930 to 1935. The causative virus has been demonstrated in cases in 16 of the 48 states. The first recovery of virus was from the 1930-31 outbreaks in California and was followed in the next two years by positive virus findings in Nevada, South Dakota, Utah in the West and in New Jersey, Delaware, Maryland, and Virginia in the East. In 1934 Minnesota was added to this list and during this year (1935) the following states were definitely proved positive: Idaho, Colorado, Texas, Iowa, North Dakota, Wisconsin, and North Carolina. The eastern type virus has apparently remained confined in general to the original region along the Eastern coast, while the western virus has gradually extended eastward from California to Wisconsin. There were 15 other states, Connecticut, New York, Georgia, Florida, Louisiana, Missouri, Nebraska, Kansas, Oklahoma, Montana, Wyoming, New Mexico, Arizona, Oregon, and Washington, in which the disease has been diagnosed clinically but so far as we are aware virus has not as yet been reported.

Reports from the infected states agree in general as regards the seasonal occurrence of the disease. The outbreaks have occurred in areas favorable for insect life during the warmer summer and early fall months, the disease quite regularly subsiding with the appearance of killing frosts. Several states have reported sporadic cases of encephalitis clinically similar to the virus disease and some have experienced outbreaks of considerable proportions in the winter. The failure to recover virus from these cases and the absence of pathology indicative of virus activity tend to place these cases without the virus group.

There is strong experimental evidence that mosquitoes are vectors of the disease, there having been at least 5 species, *Aedes aegypti, A. sollicitans, A. cantator, A. nigromaculis,* and *A. dorsalis* shown capable of transmitting the infection. The four last mentioned species are native in encephalomyelitis areas. The laboratory species, *A. aegypti,* quite regularly transmits western type virus but infrequently conveys the eastern infection. Thus far we have failed to demonstrate virus in mosquitoes in nature, and with *A. aegypti* no evidence was obtained that the progeny of infected mosquitoes are capable of transmitting infection. Some variation in the ability of given lots of *A. aegypti* to produce clinical infection in guinea pigs has been experienced. During a lull in capacity to infect guinea pigs one group of mosquitoes was fed on a normal horse which they infected only to the extent that virus was demonstrable in the blood stream from the 4th to the 7th day following the engorgement of the insects. This is presented as a possible example of the so-called abortive or occult type case in the field.

A considerable range of susceptibility to intracerebral inoculation of virus was found amongst species of domestic and wild animals other than the horse. White mice, guinea pigs, pigeons, white rats, rabbits, monkeys, sheep, goats, calves, ducks, dogs, pigs, cats, hens, and European hedgehog have all been infected with eastern virus, whereas western virus failed to infect sheep, pigs, dogs, cats, and the European hedgehog but did produce the disease in the other animals mentioned. The opossum was not found susceptible to either type in limited trials.

Aside from a moderate outbreak in Virginia this year, the four states in the East originally infected had relatively little or no infection. A new center of infection of small proportions was found in North Carolina. The western virus has been responsible for the great extension of the disease in other sections of the country.

Minnesota, North and South Dakota, and Idaho experienced particularly severe outbreaks this year. From reports received, it is estimated that there were at least 25,000 cases of the disease during this year's outbreak.

This year nine states used formol-killed brain tissue vaccine as an intended prophylactic in the field. Reports are not complete but indicate that at least 3,000 animals were treated. The available data are not sufficient for evaluation of the effectiveness of the product, since a number of the states where vaccination was practiced experienced a marked decline in incidence of the disease (probably natural). In one state the procedure appeared to have reduced the morbidity rate and encourages the further trial of the vaccine.

Twenty-five Million Tuberculin Tests

In his address on the tuberculosis eradication project, Dr. A. E. Wight, Chief of the Tuberculosis Eradication Division of the Federal Bureau of Animal Industry, reported decreases in the extent of tuberculosis in both cattle and swine. During the past year much greater progress was made in the tuberculin testing of cattle in the United States than in any other similar period. It was possible to conduct a greater amount of work because of additional Federal funds made available through the La-Follette amendment to the Jones-Connally Cattle Act. The emergency funds were used both for operating and indemnity purposes.

During the fiscal year ended June 30, 1935 more than 25,000,000 tuberculin tests were applied to cattle, and of this number 376,623 reacted to the test. The largest number of cattle ever tuberculin tested in any one month was during May of this year, when tuberculin tests were applied to approximately 3,100,000 cattle, located in about 300,000 herds.

Practically all the tuberculin testing was conducted under the area plan, although, in a few States, a considerable number of cattle were tested under the accredited herd plan. During the year from November 1, 1934, to November 1, 1935, 817 counties were added to the list of those in the modified accredited area, indicating that the degree of infection of bovine tuberculosis exists to less than one-half of one per cent.

On November 1, 1934 the States of Oregon and Virginia were added to the modified accredited area, and since that time Minnesota, Kansas, Florida, Missouri, Arkansas, New Mexico, Colorado, Wyoming, Tennessee, South Carolina, Massachusetts, Louisiana, Georgia, and Alabama have also been added, making an increase of 16 States in one year. On December 1 of this year the States of Iowa and Montana were declared modified accredited areas, making a total of 33 States in that classification.

The amount of salvage received by the owners of cattle, marketed because of reacting to the tuberculin test, was larger than during the previous year due to the increased prices for all classes of cattle. During the month of October, 1935, the average salvage received for reacting cattle was $24.13, the average appraisal $76.82, and the average Federal payment $20.95. On June 10, 1935 the maximum Federal payment for grade cattle was increased from $20 to $25. No change was made in the maximum payment for registered purebred cattle, which remains at $50.

A compilation of reports received from the Meat Inspection Division of the Bureau of Animal Industry indicates that there is a gradual reduction in the amount of tuberculosis found among hogs and cattle given post-mortem examination in connection with meat inspection. During the fiscal year ended June 30, 1935, approximately 12,500,000 cattle, exclusive of known reactors to the tuberculin test, were slaughtered at establishments operating under Federal supervision. Of this large number of cattle only 30,567, or 0.2% showed any evidence of tuberculosis upon autopsy.

There has also been a slight reduction in the percentage of hogs showing evidence of tuberculosis, but the percentage found throughout the entire country last year was slightly more than 10. It is found that hogs from sections where there is a large amount

of avian tuberculosis often show slight lesions of tuberculosis on autopsy. The tracing of the origin of hogs and cattle that show tuberculosis on autopsy continues to be one of the features of the tuberculosis eradication campaign, and has proved to be of considerable value in locating infection in modified accredited areas.

More Than 5 Million Cattle Tested in Bang's Disease Project

By A. E. Wight, Washington, D. C.

Up to November 1, 1935, agglutination blood tests for Bang's disease in cattle had been applied to approximately 5,125,700 cattle contained in 339,500 herds. Of these cattle about 531,000 gave positive reactions to the test. About 35% of the herds showed some infection.

Other points in the address of Dr. A. E. Wight, Chief, Tuberculosis Eradication Division of the Federal Bureau of Animal Industry were, briefly, as follows:

The last United States Congress appropriated $10,000,000 for cattle disease work. A portion of this is to be added to the unexpended balance of Bang's disease funds for 1935, and the entire amount is to be available until June 30, 1936.

Some changes were made in the agreement between the herd owner and the Department of Agriculture on June 10, 1935. The maximum Federal payment for grade cattle was increased from $20 to $25, but no change was made in the maximum payment for purebred cattle, which remains at $50.

In October, 1935, the herd owners cooperating in the project were notified that more than four tests would be applied to their herds by the Bureau of Animal Industry.

The total number of cattle under supervision in the Bang's disease project on November 1 was 3,868,000 cattle contained in 279,000 herds; the greatest number being in Wisconsin, with Minnesota second, Oklahoma third, Oregon fourth, and Ohio fifth.

More agglutination tests were made in October, 1935, than in any other month since the work was begun. Approximately 568,000 cattle in about 38,000 herds were tested during that month, and 44,500 were found to be positive to the test. Quite a number of these herds were those which had received a previous test.

Testing of all cattle for Bang's disease in a given area such as a county is being conducted in several localities with quite satisfactory results.

The Bureau of Animal Industry of the United States Department of Agriculture has continued to employ temporarily a large number of veterinarians to assist in this work.

Most of the testing of the blood samples takes place in the official laboratory of the state, but in some states veterinarians are permitted to use the plate method of blood testing and are not required to send all the samples to the laboratory. However, duplicate samples are forwarded to the laboratory from time to time for a comparison.

The Bureau is continuing its experiments on vaccination against Bang's disease and is conducting a number of field projects to determine the value of vaccine on calves from the ages of about five to nine months. The vaccine is prepared from a special strain of Brucella organisms.

Johne's Disease, a Menace to the Cattle Industry

By A. J. DeFosset, Columbus, Ohio

Johne's disease heretofore has not been looked upon with alarm; however, as the infection continues in its spread from herd to herd, and considering the insidious nature of the malady, it is high time all sanitary officials take prompt steps to the end that this disease be given early recognition.

It is quite apparent that Johne's disease ofttimes has escaped recognition by the practitioner, as well as the owner of affected cattle, until after it has become implanted so firmly in the herd that control measures are almost hopeless. Investigators have shown that the infection, after having been

taken into the body of an animal, may remain latent for a long period; no clinical manifestations being observed, sometimes for several years. Eventually, as the infection advances, the animal gradually loses flesh and this is associated with a more or less intermittent watery diarrhea that does not respond readily to medicinal treatment.

With the appetite, especially in the early stages, unimpaired and a conspicuous absence of fever, a veterinarian may not be called by the owner and later, due to general unthriftiness, this disease carrier, as is too often the case, finds its way to the auction sales to become a dangerous disseminator of infection. The disease is spread most readily from herd to herd through the direct transfer of affected animals.

It is important that we consider the location of the predominant lesions found on autopsy of diseased cattle. As in avian tuberculosis, these are found in the alimentary tract. As a potent factor in the transmissibility of disease organisms, could one conceive of a more favorable location for these lesions? Considering our modern means of transportation and the readily accessible marketing points for our live stock, more or less unrestricted in its movement, our industry is facing a great peril, unless more active measures are taken for the control and extermination of Johne's disease. Treatment, insofar as is known, is of no avail. Rigid sanitary control measures as a means of prevention offer the only hope.

We learn from a recent survey, that Johne's disease has been diagnosed during the past three years in 151 herds in 33 states, including all the principal dairy states. Numerically, this may not impress some of us as of serious import. It is a matter of grave concern, however, from the standpoint of the number of centers of infection from which the disease may spread, and the wide area involved, together with the nature of this malady, and its stubborn resistance to our present methods of control. Then again we must take into account that, unquestionably, these figures represent only a part of the herds actually involved.

The biologic tests used as a means of diagnosis have functioned in locating diseased animals and infected herds. The eradication of the disease, however, from herds after they had become extensively infected, has been a long drawn out and disheartening procedure. In this class of herds there have been too many instances where animals have shown clinical symptoms of disease several months after the herd had succeeded in passing a negative test. This is very discouraging to cattle owners and unless such herds are placed under quarantine there is danger of their dispersal and herein lies a real menace to the cattle industry.

The Role of Veterinarians in the Public Health Program

By Ward Giltner,
East Lansing, Michigan

This paper dealt with the same subjects discussed by the author in this magazine last summer (V. M., 30:7, July 1935, pp. 282-288) and last month (V. M., 30:12, December 1935, pp. 551-552). It contained in addition to the foregoing discussion, the following report of the short course on meat and milk inspection held in November at the Michigan State College, for veterinary practitioners interested in public health work in their communities:

The attitude of the veterinarians in attendance was cooperatively helpful, the attendance was nearly perfect, interest in the program at times rose to feverish heights. Many testified that it was something for which they had long prayed and there was an expression of desire that the subject of veterinary participation in public health be considered annually in veterinary conferences, meetings, or short courses. The reaction of the author was that the dull, formal, and conventional wording of the program titles germinated, flourished, and blossomed forth into an inspiring living thing when translated ito action. Members of the agricultural and veterinary faculty were ably assisted by representatives of the Federal Bureau of Animal Industry and U. S. Public Health Service, and the State Departments of Agriculture and Conservation and municipal meat, milk, and sanitary inspectors from seven Michigan cities. The sanitary engineers of the seven participating counties served diplomatically and effectively as chairmen of the half-day sessions, stimulating and directing discussions and participating therein.

Swine Dysentery in Iowa from a Field Standpoint

By R. M. Hofferd, Cedar Rapids, Iowa

Swine dysentery is defined as an acute infectious disease of swine characterized chiefly by bloody diarrhea which contains gross red blood, mucus and sometimes particles of croupous exudate. It has various synonyms in the field, such as, hemorrhagic enteritis, bloody diarrhea, bloody dysentery, swine typhus, black scours and others. The disease was encountered in feeding pigs in Western Iowa in 1918, according to oldest available reports and has existed in Eastern Iowa for ten years. It has been spread to all corners of the state by the movement of livestock for feeding and breeding purposes. The community sales have been a great factor in its spread despite the efforts of state regulatory officials to formulate and enforce regulations. Some veterinarians have reported death losses up to 1,500 head in their respective practice areas in a single year. It has caused great alarm among veterinarians, livestock raisers and feeders. It is probably least prevalent in hot summer months but occurs any time of the year. Where efforts are made to regulate the diet and control the intake of the infection by sanitation the average mortality is 30%. Where such efforts are not made it sometimes runs up to 90%. Pulmonary complications sometimes develop from inhaling dust infected from fecal discharges. Mortality is usually high in these cases. Some cases terminate after a relatively small loss. Animals of all ages, cholera-immune or cholera-susceptible are susceptible. Very young pigs are less resistant to the disease than older swine. One attack probably does not render swine immune to subsequent attacks. Anything that lowers the resistance of the animal renders it more susceptible.

The disease is most likely transmitted by the ingestion of infective material. Experimentally it has been transmitted by feeding material from affected animals and by exposure in infected pens. It often occurs in hogs that are following feeder cattle. It is thought that cattle may be carriers of the disease. Premises may remain infected from three months to three years. The disease is frequently transmitted by new shipments of swine. The period of incubation is usually about seven days but it is thought it may be as short as two days. The etiology is not agreed upon by investigators and laboratory technicians. Various bacterial and protozoal micro-organisms are found associated with it.

The temperature variation is from 100.8° to 106° F. but is usually about 104.5° F. There is profuse diarrhea at the onset which later becomes bloody. There may be loss of appetite, diminished appetite or no impairment. Some cases develop rapidly with great weakness and prostration early in the course while in others these symptoms appear later. Pulmonary symptoms are sometimes seen. The disease becomes less acute as it progresses in a drove.

Post-mortem lesions are chiefly confined to the cecum and large intestine; evidenced by inflamed and bleeding mucosa and later diphtheritic membrane formation. Often there is a gastritis and at times nephritis, cystitis and a few hemorrhages on kidneys and in the urinary bladder. Glands sometimes are hyperemic. There may be bilateral pneumonia, slight or extensive. Chief control measures are sanitation and diet. Medicinal and biological treatments should be supported by these measures. Clean ground rotation is advised in prevention which is more effective than cure. Mature hogs (brood sows) may be carriers and upset this plan or drainage may carry the infection to new ground. New shipments of cattle or hogs should be segregated for a reasonable time before permitting them to mingle with healthy animals on the farm.

The diagnosis of swine dysentery ordinarily is not difficult. Hog cholera may complicate this disease and in cholera-susceptible droves it may be difficult to eliminate hog cholera at times.

Swine dysentery interferes greatly, at times, with the successful immunization against the most devastating disease of swine, hog cholera.

Acid-fast Organisms Found in So-Called Bumblefoot of Chickens

By Hubert Bunyea, Washington, D. C.

Microscopic examination of smear preparations from purulent material taken from bumblefoot lesions of chickens revealed the presence of acid-fast organisms possessing morphological characteristics similar to those of *Mycobacterium tuberculosis avium.* Some lesions were located on the sole of the foot, and others were interdigital. Live fowls possessing such lesions failed to react to the intradermal tuberculin test. Tissues from bumblefoot lesions, when subjected to histological examination, showed no changes indicative of tuberculosis. Purulent material from a number of cases was treated with antiformin after the method of Petroff, seeded upon suitable media and incubated at 37.5°C. for four weeks. No growths resulted in any instance. Animals and fowls were refractory to intraperitoneal inoculations with material containing the organisms. However, one case of bumblefoot was produced experimentally in which acid-fast microorganisms were later demonstrated. The etiological relationship of the acid-fast organism for bumblefoot is not known.

Pullorum Disease in Turkeys

By E. P. Johnson, Blacksburg, Va.

A brief review of the literature pertaining to pullorum disease in turkeys was mentioned. This was followed by a detailed description of two outbreaks of the disease in week-old poults. In one of these flocks nearly 100% mortality resulted, while in the other 46 of 140 poults died of the disease. The symptoms and lesions of the disease, as well as the characteristics of the recovered organism were described. One breeder female from each of the affected flocks was found to give a positive agglutination test for pullorum disease in dilutions beyond 1:400.

A non-pathogenic organism described as P_1 was recovered from turkeys reacting to the agglutination test for pullorum disease in dilutions of 1:25. Sera from these were found to agglutinate P_1 antigen in dilutions beyond 1:100. Brief mention was made of cross agglutination with this organism when routine tests are carried out for the detection of breeders that react to the pullorum disease test. Complete agglutination in dilutions above 1:50 seem to be necessary for detection of breeders that carry *S. pullorum.* Fowl typhoid carriers would likewise be removed on this basis.

Report of Committee on Transmissible Disease of Poultry

By Leo F. Rettger, New Haven, Conn.

This report stressed the importance of identification and elimination of so-called "disease carriers" in poultry flocks. The following diseases being given particular consideration: fowl tuberculosis, blackhead or enterohepatitis, para-typhoid, pullorum disease and fowl typhoid.

The problem of carrier elimination in each of these diseases was discussed. The ultimate aim in control programs should be eradication, which should be possible and practical, as it has been in bovine tuberculosis eradication from dairy herds. The disease identification phase should be entrusted only to trained technicians who are responsible to higher state or federal authorities through which the machinery of carrier elimination and flock control is carried out.

Pullorum disease offers perhaps the best example of what is the logical method of attack on the carrier problem. The accepted agglutination test (or tests) when properly conducted singles out infected breeder birds. On the strength of such tests a definite system of elimination of carriers is adopted by which poultry flocks may be freed from the disease and remain free, under intelligent management.

The small farm flock offers a difficult problem in any program of disease elimination, especially where chickens, turkeys and other farm stock are permitted to mingle on the same ground. Attempts to free such farms from poultry disease are sure to meet with failure, and efforts should be concentrated on flocks the sanitation and

management of which are such as to offer real promise. Education of the small flock owner should not be neglected, however.

Very large commercial hatcheries also present a difficult problem. This should admit, however, of solution by concentrating efforts on a few individual poultry units, and adding to these as experience warrants.

Lurking infection, such as the organisms of pullorum disease, fowl typhoid and para-typhoid, constitute just so many firebrands, needing only new timber to start a new conflagration. Wherever it is at all possible the last vestige of infection should be removed, and the flocks maintained on a disease-free basis.

Laryngotracheitis

By Charles S. Gibbs, Amherst, Mass.

Early writers on poultry hygiene recognized a disease similar to laryngotracheitis which they called bronchitis. The name laryngotracheitis was suggested by Dr. H. J. Stafseth, at the 1929 Conference of State and Federal Research Workers in Animal Diseases, and recommended by the Special Committee on Poultry Diseases appointed to report at the 1931 meeting of the American Veterinary Medical Association. This name has since been adopted by animal pathologists in the United States.

Laryngotracheitis is due to a filterable virus, as has been reported by Beaudette (1930), Beach (1930) (1931), Gibbs (1931) (1935), and Graham, Thorp and Jones (1931). Seifried (1931) described intranuclear inclusion bodies in the epithelial cells of the trachea that appear to be responsible for the disease.

The next important step in the development of knowledge concerning laryngotracheitis was the study of the method of transmission of the virus from affected to unaffected birds. This has been accomplished by Kamarov and Beaudette (1931) and Gibbs (1931) (1932) in finding chronic carriers of the disease. This discovery led to a sanitary program for the control of the malady, Gibbs (1932) (1933). The fundamental points of this plan are (1) the eradication of carriers from the premises, (2) the destruction of the virus in the houses, on the equipment and grounds occupied by the flock, (3) the prevention of the re-introduction of the disease.

Another important step in the control of laryngotracheitis is cloacal and bursal vaccination, discovered independently and at the same time by Hudson and Beaudette (1932), Beaudette and Hudson (1933), and Gibbs (1933) (1934). Vaccination may be used to develop an immune poultry and the subsequent control of the disease.

Both of these methods have a respective place in the control of laryngotracheitis. In regions in which the disease is not very prevalent the eradication and control plan should receive first choice. In other places in which practically all of the flocks are affected, vaccination may be resorted to.

These methods for the control of laryngotracheitis should be under the direction of responsible persons of experience and skill, and the campaign against laryngotrachetis systematically carried out.

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Walter Wisnickey, State Veterinarian of Wisconsin, was elected president for the ensuing year and L. Enos Day, Chicago, secretary.

Acetonemia in Cows

ACETONEMIA is not a new disease of cattle. It has been with us a long time and was recognized in Europe more than a quarter century ago.[1] Why we have so often overlooked it in this country is simply unexplainable. Jensen, in 1908, gave a good description of it; Jonk, in 1911, discussed it fully and yet we paid no attention to it. A few years later, Hauptner said that it might be overlooked, and still the caution was wasted upon us.

Acetonemia is manifested by the presence of incomplete products of oxidation in the blood, in the urine and in the milk. The clinical observations of Fincher and the blood, urine and milk examination of Hayden have given us a mass of very accurate information upon this disease, and it should be overlooked no longer.

It is prevalent, perhaps, everywhere in this country. Its age distribution has not been worked out, but of 70 cases recorded by Fincher, 10 were in two-year-olds, five in three-year-olds and 16 were in animals more than seven years old; 27 per cent of the cases were thus below the milk fever age—five years.

The first description of acetonemia in this country was given by Alston.[2] Acetonemia is ordinarily spoken of as being a post-parturient ailment, but approximately half of the cases occur at parturition, and of the parturient cases observed by Fincher, all but two were complicated by dystocia, retained afterbirth, abortion, metritis or milk fever. Seven cases were found complicated with milk fever. Acetonemia is a common complication of metritis. Naturally, if the former is relieved, the cow has a better chance of recovery from the latter.

Acetonemia may be associated with almost any other disease. The animals stop eating, go down in milk, rumination is decreased and peristalsis lowered. Many cases of meningitis are complicated by or largely due to acetonemia. A common result of acetonemia is an unequal distribution of temperature. There is a wide variation in the syndrome. Sometimes the predominating symptoms are those of nervous involvement. Sometimes digestive involvement and sometimes one observes only paralytic symptoms. The number of cases in which acetonemia may be a complication of other conditions is really remarkable. The prompt relief of the acetonemia, of course, improves the chances for recovery from the other conditions.

THE disease is definitely diagnosed by the Hayden modification of the Rothera test of the urine. This is made as follows:

To 5cc of freshly drawn urine in a test tube, add about one gram of a powder composed of one part sodium nitroprusside and 100 parts of ammonium sulphate C. P., and 2cc of ammonium hydroxide solution. If the sample is positive for acetone bodies (ketones) a permanganate color develops and deepens on standing. The reaction is striking and definite. It enables the practitioner to make a positive diagnosis in these cases and apply specific treatment of high efficacy, where formerly he could do little.

Ordinarily a sample of urine may be obtained for examination by stroking the escutcheon upwards.

The treatment for acetonemia varies. The promptest recovery is attained by injecting eight ounces (250 grams) of dextrose intravenously in 20 to 40% solution. The injection should be made slowly and very slowly when the condition is complicated by milk fever or prostration. Complications should receive appropriate treatment in addition to the treatment for acetonemia.

Where the treatment must be administered by the owner, half-ounce doses of chloral hydrate per os every three hours is preferred. The treatment although slower is no less specific than the dextrose.

[1] Notes from a discussion at a recent veterinary conference.

[2] Alston, J. T., 1933. Palsy After Calving. VETERINARY MEDICINE, 28:4. April, 1933, p. 159.

THE SORREL MARE OR WHY I AM NOT A GREAT SURGEON

Once upon a November day long ago, when the writer was a senior student in a veterinary college, a beautiful sorrel mare that showed unmistakable signs of having been dipped in Belgian blood, was presented at our clinic. Then as now good horse flesh was my weakness. I at once recognized her as a good one.

Imagine our surprise a few days later when word was passed around that a famous surgeon (now deceased) from afar off was coming to perform the radical operation for fistula of the withers. A scarcely noticeable enlargement was visible on the withers.

The surgical wizard arrived in due time and the stage was set; the mare was placed on the operating table and given a general anesthetic. The operation was started by cutting along the median line in the region of the withers for a distance of at least 12 inches and continued by cutting through perfectly good muscle tissue to a depth of five or six inches. A section of the ligamentum nuchae about two and one-half inches long was removed. It was said to be necrotic. During the course of the operation, the boys on the clinic floor caught two, ten-quart buckets full of perfectly good red blood as it ran off the edge of the operating table. The wound was packed with several yards of gauze and sutured.

The next day when the sutures were removed, the cavity could have contained the crown of an old style derby hat and was standing brimful of serum. The shrewd old dean said: "Boys, this is a good example of what you will not want to do in practice." I made up my mind there and then, that at least one, should he squeeze through the final examinations, was going to take his advice.

The mare was kept in a clinic all winter and the wound was dressed daily.

The last time I saw the Sorrel Mare, which was a few days before graduation in April, she was but a shade of her former self. The wound on the withers was almost healed, but there was an enlargement at the last dorsal vertebra as large as my fist and it looked suspiciously like it might contain pyogenic organisms. Her once beautiful skin now covered only a skeleton and she walked with a faltering step. Her sunken eyes had an expression that told their own story. A wound can be mortal without destroying life, for she was not the same animal that had pranced into our clinic five months earlier.

I know not the ultimate fate of the Sorrel Mare, but I am satisfied that the opportunity to observe this case prevented me from becoming a great surgeon. I would not deter anyone from any surgical aspirations, but whenever I hear either a veterinarian or an empiric exaulting the radical operation for fistula of the withers, my mind automatically reverts, back across the years, to the "Sorrel Mare."

REMBRANDT MORGAN.

Winfield, W. Va.

DISQUALIFYING BLEMISHES IN STALLIONS

Dr. W. A. Harron of Homewood, Manitoba, draws attention to the old question of what constitutes a sufficient reason for disqualifying a stallion offered for public service. At a meeting of horse breeders held at Winnipeg recently, a capable judge of horses pointed out that a stallion that has passed veterinary inspection year after year, while young, is sometimes finally condemned for an acquired blemish after a brilliant career as a producer of excellent offspring. The contention cannot be answered intelligently for the reason that stallion registration laws have but a hypothetical background. They are based upon unknowns which lead to endless controversies between lawmaker, horseman and veterinarian when rigidly enforced to the letter. Often the horseman is the victim of decisions based upon the written law that cannot be supported by known facts about heredity. The veterinary inspector often has no alternative. He must do what the laws direct. He cannot afford to risk an accusation of partiality.

Vitamin Chart*

* Vitamin Products Co., Milwaukee, Wis.

Vitamin A

Functions:

1 —Promotes tissue formation.
2 —Increases blood platelets.
3 —Promotes growth and feeling of well-being.
4 —Promotes appetite and digestion, especially in children.
5 —Essential to the health and integrity of epithelial tissue and its resistance to infection, notably of eyes, tonsils, sinuses, air passages, lungs and gastro-intestinal tract.

Results of Deficiency:

1 —Loss of appetite.
2 —Retardation of growth and development.
3 —Physical weakness.
4 —Susceptibility to disease of the eyes (corneal ulcers), ears (otitis media), kidneys.
5 —Interferes with reproduction by failure of ovulation in the female and temporary injury to the semeniferous epithelium in the male.
6 —Secondary anemia.
7 —Excessive growth of lymphoid tissue.
8 —Dullness or perversion of special senses.
9 —Formation of kidney stones.
10 —Cystitis, gastritis, sinusitis, bronchitis.

Results of Absence:

1 —Xeropthalmia (eye inflammation and ulcers).
2 —Cessation of growth.
3 —Failure of appetite and digestion.
4 —Sterility of both sexes.

***Most** Reliable Sources:*

Whole milk, butter, cheese, egg yolk, cod liver oil, thin green leafy vegetables, yellow corns, yellow sweet potatoes, carrots, spinach, green beans, peas, bananas and fish oils.

Vitamin A is destroyed by the irradiation of milk or other foods.

Vitamin B

All cooked foods are deficient in this nerve and brain nourishing element depending on the degree of heat and the time the food is exposed to the heat.

Functions:

1 —Increases appetite.
2 —Promotes digestion.
3 —Promotes growth by stimulating metabolic processes.
4 —Protects body from certain nerve and brain diseases.
5 —Increases quantity and improves quality of milk during lactation.
6 —Stimulates pancreatic secretions.
7 —Necessary to maintenance of thyroid and adrenal glands.
8 —Necessary to normal function of anterior pituitary.

Results of Deficiency:

1 —Impairment of appetite and digestion.
2 —Loss of weight.
3 —Loss of vigor.
4 —Constipation.
5 —Emaciation.
6 —Subnormal temperature.
7 —Pathological enlargement, and functional disorders of the thymus, adrenals, pancreas, testes, ovaries, spleen, heart, liver, kidneys, stomach, thyroid, brain and anterior pituitary.
8 —Various manifestations referable to the nervous system, leading to paralysis of groups of muscles.
9 —Tendency to diabetes. (Probably the major cause.)
10 —Tendency to nervous disorders.
11 —Tendency to disorders of alimentary mucosa.
12 —Tendency to thyroid disorders.
13 —Reduces hemoglobin.
14 —Loss of sex potentia because of anterior pituitary inactivity.

Results of Absence:

1 —Beri-beri (paralysis of certain groups of muscles).
2 —Peripheral and other forms of neuritis.
3 —Atrophy of certain lymphoid tissues throughout the body.

Most Reliable Sources:

Whole grain cereals, peas, and beans, raw fruits, buttermilk, corn, cabbage, spinach, egg yolk, honey, yeast.

Vitamin C

Functions:

1 —Essential to the health and integrity of endothelial tissues.
2 —Cooperates with B in nutrition of thyro-adrenal system.
3 —Is essential to oxygen metabolism.
4 —Cooperates with D in regulation of calcium metabolism.
5 —Promotes leucocytic and phagocytic activity.

Results of Deficiency:

1 —Tendency to bruise easily, producing "black and blue" spots in skin.
2 —Loss in weight.
3 —Physical weakness.
4 —Shortness of breath.
5 —Rapid respiration.
6 —Rapid heart action.
7 —Tendency to hemorrhage.
8 —Reduced hemoglobin and tendency to certain types of anemia.

9 —Hypertrophy and reduced secretion of adrenals.
10 —Hypertrophy or morbid secretion of thyroid (toxic goiter).
11 —Decrease in weight of spleen, liver, stomach and intestines. B deficiency a cooperating factor in this.
12 —Necrosis of pulp of teeth. Most cases of tooth decay are due to vitamin C deficiency.
13 —Friability of bones.
14 —Swelling and redness of gums.
15 —Tendency to disease of blood vessels and heart.
16 —Tendency to peptic and duodenal ulcers.

Results of Absence:

1 —Scurvy.

Most Reliable Sources:

Green peppers, oranges, lemons, tomatoes, raw or canned (without the addition of soda), bananas, and other raw fruits, sprouted grains, green leafy vegetables, potatoes, unpasteurized milk, liver and raw cabbage.

Vitamin C is not stored in the body. A fresh supply must be had every day.

Vitamin D

Functions:

1 —Controls calcium equilibrium and regulates mineral metabolism.

Results of Deficiency:

1 —Muscular weakness.
2 —Instability of the nervous system.
3 —Lack of resistance against infections.
4 —Marked increase in specific irritability of nervous tissues.

Results of Absence:

1 —Rickets.
2 —Deformity of bones in the child.
3 —Defective development of teeth.

Vitamin D, the Only Dangerous Vitamin, Causes Arterio-Sclerosis in Overdosage and Premature Symptoms of Senility.

Most Reliable Sources:

Cod liver oil and other fish oils, egg yolk, whole milk and spinach. Exposure of naked skin to sunshine or ultra violet light. Few foods contain Vitamin D. Nature expects the animal to get this vitamin from the sunshine by the short wave length rays changing the ergosterol in the skin into Vitamin D.

Vitamin E

Functions:

1 —Necessary to reproduction—in both male and female.
2 —Probably concerned in the metabolism of calcium and magnesium by increasing their diffusibility in the tissue fluids, and increasing the mineral nutrition to the nervous and muscular tissues. This action also prevents the formation of calcium deposits in blood vessel walls, tendency to arterial hypertension, and loss of motility of eye lens.

Results of Deficiency:

1 —Sterility. Deficiency causes permanent and irreparable injury to the semeniferous epithelium in the male, temporary sterility in the female.
2 —Mysterious pains in soft tissues, nervous system and muscles.
3 —Tendency to cerebral hemorrhage.
4 —Tendency to arthritis.
5 —Loss of accommodation in lens and iris of the eye.
6 —Dermatitis, eczema, urticaria.

Most Reliable Sources:

Whole grain cereals (whole wheat, whole corn, etc.), milk, lettuce, watercress and raw fruits.

Vitamin F

(*A Growth Factor of Our Own Designation*)

Functions:

1 —Promotes growth.
2 —Concerned with calcium metabolism. Reduces serum calcium, cooperates with vitamin D if both are present, but aggravates rickets if the supply of D is deficient.
3 —Aid in anemic conditions of deficiency origin.
4 —Improves skin color and circulation.

Results of Deficiency:

1 —Dry skin.
2 —Easily fatigued.
3 —Distress in hot weather.
4 —Constipation.
5 —Susceptibility to vitamin D poisoning.
6 —Friability of bones (especially in the aged).

Most Reliable Sources:

Associated with E in some cereals—oats and rye in particular. Probably present in milk and cod liver oil, and responsible for the greatly reduced toxicity of the vitamin D content of cod liver oil over the synthetic vitamin.

Vitamin G

Functions:

1 —Necessary to growth and development.
2 —Necessary to normal calcium metabolism and erythrocyte formation.

Results of Deficiency:

1 —Underdevelopment.
2 —Cataract of the eye and other calcium deposits.
3 —Pellagra.
4 —Abnormally slow regeneration of erythrocytes—secondary anemia.

Most Reliable Sources:

Cereal germ, brewer's yeast, eggs.

Hookworm Disease in the Dog

Report of Typical Case

By J. GILBERT HORNING,
Houston, Texas

THE following case is typical of a considerable number presented in our clinic. Many of these give a history of having spasmodic attacks of poor health over a long period. Many report infrequent worming, some with proprietary medicines, others having been wormed by ourselves or other veterinarians. However the wormings were not given regularly and in the majority of cases, when wormed in veterinary hospitals, the animals were not returned for re-worming. In our experience, this type of case is strictly a case for hospital supervision during the worming and this carried out at indicated periods, depending upon the condition of the patient, and the severity of the infestation as indicated by the egg count in fecal specimens. Supportive treatment, appropriate to the particular case, is always given. In some cases supportive treatment is limited to the proper nourishing foods necessary.

The following daily account is taken from our hospital records.

Subject.—Wire-haired fox terrier; male; age three years:

June 29: Not well in the forenoon; refused breakfast of eggs; tried to eat grass; vomited a white froth (result of a cathartic previously given); bowel movement soft with slight blood and mucous. In the afternoon went for a run; fairly active; ate a large dinner.

June 30: Ate breakfast of two eggs and a good dinner. Appeared well; had a long run; was very lively; ate supper of plain boiled soup meat. One good bowel movement during the day.

July 1: Appeared well; was hungry for breakfast of boiled meat; ate a good dinner. One bowel movement during the day.

July 2: Ate two eggs and a piece of toast for breakfast; had good bowel movement (hard); seemed well and peppy; ate a big dinner, and at supper he was very hungry.

July 3: Not so well; refused breakfast; had soft bowel movement with a little blood and mucous; was listless and would not eat until 9:00 P. M., when he ate some plain boiled liver.

July 4: Seemed better; ate breakfast of eggs and toast; ate dinner; was hungry for supper; bowels o. k.

July 5: Had a good day; hungry for all three meals.

July 6: Appeared well; ate his breakfast and a good dinner; had lots of pep all day, and a good run; was very hungry; ate good supper; bowels o. k.

July 7: Not well; refused breakfast; had soft bowel movement in morning, no blood; a little later passed two little clots of jellied blood, bright red in color; refused lunch; seemed very listless until late afternoon; went for a run in the evening, seemed lively enough; was hungry for late supper.

July 8: Seemed well; ate breakfast; lunch and dinner; bowels, o. k.

July 9: Ate breakfast of two eggs; very hungry for noon meal and evening meal; had a run late in evening, acted well.

July 10: Ate breakfast of two eggs; ate about one-half the usual amount at noon; had some rumblings in the stomach; bowel movement a little soft with some blood and mucous; refused supper; spirits fairly good.

July 11: O. k. all day.

July 12: O. k all day.

July 13: Seemed o. k.; ate breakfast and noon meal; went for a run; in good spirits all day.

July 14: Well all day; ate three meals; seemed very lively; was especially hungry; ate good supper and begged for more.

July 15: Not so well; refused breakfast.

The dog was treated for hookworms on the 15th, again in two weeks, and again in a month. He has had no recurrence of mucous and bloody stools from July 15th up to the present time (November 15th).

His appetite has been splendid and his general condition excellent. He has gained four pounds in weight since the 15th of July.

The term hookworm is applied to all members of the Ancylostomidae family. The species with which veterinarians have to contend in dogs and cats are: *Ancylostoma braziliense, Ancylostoma caninum* and *Uncinaria stenocephala.* The geographical location of the animals largely determines the species with which they are infested; *A. braziliense* being the predominating spe-

cies in cats in tropical America and southern United States. In more northern latitudes, *A. braziliense* gives way entirely to *A. caninum*. In dogs, *A. braziliense* is also common throughout the tropics, but does not replace *A. Caninum* so completely as it does in cats. In Europe both species are largely replaced in dogs by *Uncinaria stenocephala*. The *U. stenocephala* occurs in North America but is not common here.

For treatment, tetrachlorethylene in hard gelatin capsules or soluble elastic capsules or Hexylresorcinol, in the proper doses, is recommended. The treatment with both of these drugs has been discussed by the writer in previous articles in VETERINARY MEDICINE (V. M., 25:8, Aug. 1930, p. 336; and 30:11, Nov. 1935, p. 480).

CALCIUM GLUCONATE IN THE TREATMENT OF AZOTURIA

As the cold weather advances, the number of azoturia cases will increase. I have had quite some experience with this disease in the last 37 years. The best treatment I ever used is calcium gluconate intravenously. The following is an illustration:

A five-year-old roan gelding, weighing 1800 pounds, was knuckling in the left hind leg and looked as though he would go down within half an hour. The temperature was 103°F.; perspiration just commencing. I diagnosed the case as azoturia at a glance and told the owner it was a pity to lose such a good horse, one of a pair of full brothers, a perfectly mated team.

Treatment: I gave an intravenous injection of calcium gluconate (Jen-Sal), 125cc, into the jugular vein by means of the injector made for the purpose, squeezing the bulb very slowly, taking about five minutes to force it in from the rubber stoppered bottle in which it was shipped.

Presto! He gave a big sigh as we came out of the single stall in which he was standing, and turning around to look at him, I was amazed to see him standing on all four feet as good as ever. The fastest recovery I ever saw.

I then gave a half-grain of arecoline, subcutaneously together with lobeline and strychnine. The dose of arecoline may seem a little large, but the patient being young and weighing 1800 pounds, its action was all that could be desired. After backing the horse out to the open floor, an ounce and a half of aloes, with a dram of calomel, was given per os. There was copious defecation 30 minutes after giving the arecoline. The next day the horse seemed to be in perfect health and the case was discharged.

When horses are down, this treatment has required an average of 2½ hours to get them on their feet, except in moribund cases. It is the most reliable treatment for this disease and I have tried them all. For me it has been as specific for azoturia in horses as it is for parturient paresis in cattle.

R. W. BALKAM.

Matawan, N. J.

RATIONS FOR MAINTENANCE AND FOR MILK PRODUCTION

Each cow's daily allowance of concentrates should be determined by her daily milk flow. Experiments by the Bureau of Dairy Industry indicate that, when fed good legume hay and silage along with grain at the customary rate, Jersey cows will consume enough nutrients in the roughage for maintenance and a daily milk production of 10 pounds, and Holstein cows enough for 16 pounds.

For each pound of milk in excess of 10 pounds, Jerseys and Guernseys should have from 0.5 to 0.6 of a pound of concentrates daily; and Holsteins, Ayrshires, and other breeds that produce milk testing around 4% fat, should have 0.4 of a pound of concentrates for each pound of milk in excess of 16 pounds.

With an extra good quality of green, leafy hay the roughage consumed may be sufficient for maintenance and the production of more than 10 or 16 pounds of milk, and less grain will be required. With poor quality hay the roughage consumed may not be sufficient for the production of as much as 10 or 16 pounds of milk in addition to maintenance, and heavier grain feeding will be required.

Roup or Common Cold of Poultry

THE disease of fowls known as roup or cold, is a common condition in any area where poultry raising forms a part of the animal industry. The name "roup" is popularly and quite loosely applied to any disorder of poultry which involves the upper air passages as well as the eyes, and which shows evidence of being communicated from fowl to fowl. The disease may be defined as a contagious disease of fowls which manifests itself by a catarrhal inflammation of the mucous membranes of the upper air passages and eyes and is not caused by the viruses of fowl pox or laryngotracheitis. It causes enormous losses to poultrymen by reduced egg production, loss in weight, unthriftiness and in many cases death of the bird. The weakened condition of birds also allows other diseases to gain a foothold. The term roup may include many different forms of the disease which may be designated by a variety of names such as nasal roup, ocular roup, diphtheritic roup, avian diphtheria, canker, coryza, infectious rhinitis and catarrhal roup. Each of these names designates certain stages in the development of the disease.

Roup is usually not marked by a high rate of mortality and when it remains confined to the nose of the more vigorous fowls, recovery can ordinarily be expected. If the disease is complicated by some other type of infection, peculiar to the respiratory tract, the mortality is usually high. Death from roup alone is usually caused by suffocation or starvation.

Occurrence

Roup and fowl pox were once thought to be the same but it has been definitely proved that fowl pox is caused by a specific virus and may occur uncomplicated by other diseases. Roup may be found in flocks infected with fowl pox and complicate the symptoms of both diseases so that diagnosis is difficult. Roup is most prevalent in the fall and early spring when weather conditions are quite changeable and excessive amounts of moisture collect inside the house. Often when the disease occurs during the fall the infection remains throughout the winter and manifests itself again in the spring. The spread of this disease through a flock is often very rapid. However, the rate of spread may be governed by predisposing factors such as damp, cloudy weather; sudden and marked changes in temperature; crowding; faulty ventilation; external and internal parasites; and infectious diseases.

Cause

Scientists have not agreed upon the causative agent of this disease. Some investigators contend that roup is due to a virus. This contention has been supported by reproducing the disease experimentally with bacteriologically sterile filtrates. Others claim to have isolated a specific organism, *Hemophilus gallinarium*, which will cause lesions characteristic of roup when susceptible birds are exposed. Still other investigators claim it is a combination of virus and secondary invading organisms. The causative agent may infect the entire flock and remain present in the house and in carrier birds for some time.

Symptoms

The symptoms of roup vary in different flocks and in different birds within the same flock. Then length of time the bird has been affected determines to a certain extent the symptoms and lesions the bird may show. One of the most common early symptoms is a watery, clear discharge from one or both nostrils. Many birds may be noticed sneezing, gaping and drooping around. A watery discharge filled with bubbles may also be noticed in the eyes. The birds rub their eyes often upon the points of the wings and shake their heads. Later the discharges from both the nostrils and the eyes become more gelatinous and sticky. The exudates soon dry on the outside of the nostrils and eyelids, forming a crust which interferes with breathing and closes the eyes. The feathers of the wings are crusted over and dirty.

TABLE I.—*Differential Characteristics of Respiratory Diseases*

Disease	*Onset*	*Exudate* *Location*	*Color*	*Odor*	*Consistency*	*Tenacity*
Roup	Variable	Eyes and sinuses	Yellow	Putrid	Fluid first, later cheesy	Adherent
Nutritional Roup	Slow	Eyes and esophagus	White	None	Cheesy	Non-adherent
Laryngo-tracheitis	Rapid	Eyes, pharynx, larynx and trachea	Yellow to blood tinged	None	Cheesy	Non-adherent
Fowl pox	Slow	Nodules on comb and unfeathered parts Mouth, pharynx and larynx	Pale Yellow	None Not putrid	Blister-like Cheesy	Adherent

The anatomical arrangement of the ducts from the eyes to the nasopharynx in birds is such that they do not permit sufficient drainage to take care of this discharge. The exudate accumulates around the eyeballs and exerts considerable pressure on the eyes. The infection may spread to the mucous sacs beneath the eyes which become distended with exudate. Often these enlargements are the size of a walnut. The exudate in the eyes and sinuses is somewhat gelatinous in the early stages of the disease, but later become cheesy and hard. In turkeys the material that collects in the nasal sinuses remains a thick, mucilaginous liquid. The exudate from both the nose and eyes has a very characteristic putrid odor. The odor is most noticeable after the disease has been in a flock for several days and can be detected upon entering the poultry house.

If the infection spreads to the lower air passages the condition is far more acute and the birds may die in two or three days. In these cases the larynx is usually filled with a cheesy exudate or membrane streaked with bloody mucous. The cheesy membrane can be removed easily and does not leave an eroded area beneath. In other cases the inflammation may extend into the bronchi, resulting in an acute bronchitis. When this happens breathing is accompanied by rattling noises. Affected fowls sit quietly with feathers ruffed, have little or no appetite, and lose strength rapidly.

Post Mortem Lesions

Fowls dead of roup are commonly wasted in flesh. The mucous membranes of the nose, throat and eyes are red and covered with a mucous or cheesy exudate. The cheesy plugs found in the sacs below the eyes are also quite characteristic of the disease even if similar lesions may occasionally be observed in other diseases.

Differential Diagnosis

The characteristics of roup and other diseases which closely resemble it or which are often associated with it may be summarized as shown in table 1.

Treatment

The treatment of fowls affected with roup is not very successful. Removing the cheesy exudate from the sacs beneath the eyes and opening the eyelids and nostrils give temporary relief. Injecting argyrol into the sinuses with a hypodermic syringe will often prevent them from filling up again with exudate. The use of vaccines and mixed infection bacterins has proved helpful in many cases but cannot always be relied upon. If only a few birds are affected argyrol or iodine and mineral oil may be dropped into the nostrils and throat.

Control

Introduction of the disease by bringing in infected fowls should be guarded against, always. The most important control measure is to determine, and, if possible, remove the predisposing factor. The houses should be carefully studied for defects, particularly faulty ventilation. The number of birds in a house should not be too large. All parasites should be removed. Be sure the birds are fed a suitable ration. Keep the house clean and dry. If only a few birds are affected remove them to an isolation pen as soon as they show symptoms of the disease. Always obtain an accurate diagnosis of the disease before attempting any treatment.—*Animal Pathology Exchange, Univ. of Illinois.*

ARTIFICIALLY INDUCED OVULATION IN THE CAT

Greulich induced ovulation in nine of twelve domestic cats by stimulating the distal portion of the genital tract with a glass rod. The minimal length of the interval between stimulation and ovulation was found to be no more than twenty-five hours. He shows that ovulation does not invariably follow normal coitus in the cat, even if the female is clearly in heat when the mating occurs. This is interpreted as favoring the idea that the follicular cycle and the estrous cycle do not necessarily coincide in this form. Though the exact mechanism effecting ovulation in the cat remains to be elucidated, the present investigation definitely eliminates all constituents of seminal fluid as necessary causative factors in that process.—*Jour. A. M. A.*, 102:23, June 9, 1934.

HOG PRODUCTION INCREASING

The down trend in hog production ended last spring. Production is now increasing, and this will be reflected in increased slaughter supplies next summer, according to the annual outlook report issued by the Bureau of Agricultural Economics. Continued increases in production in 1936 and 1937 are in prospect ranging from 25 to 30 per cent in 1936, and more than that in 1937 as compared with 1935. Federally inspected slaughter of hogs during the 1934-35 marketing year was the smallest in a quarter of a century, but slaughter in the 1935-36 marketing year will be even smaller. The fall pig crop of 1935 is unusually large as compared to the spring pig crop, and the spring pig crop of 1936 will probably also be larger than last spring's crop.

ECONOMICAL RATION FOR CATTLE

When corn is high in price and soybeans are plentiful, as is the case this season, a mixture of 400 pounds of ground shelled corn, 200 pounds of ground oats or wheat bran, and 100 pounds of ground soybean meal (the product left after the oil has been extracted), is a very satisfactory winter feed, when given with legume hay and silage. When mixed grass hay cut at a mature stage of growth is fed instead of legume hay, the proportion of ground soybeans or soybean meal should be doubled. While the cows are on good pasture, the corn and oats in the ration may be increased about 25 per cent, although the 4-2-1 mixture is very satisfactory even on pasture.

ANIMAL AVITAMINOSES OR HYPOVITAMINOSES

The Divisions of Animal Pathology and Hygiene and of Animal Nutrition of the Illinois Agricultural Experiment Station have made available an eight-page tabular summary of the present knowledge of avitaminoses in animals. The symptoms and preventive treatment of each vitamin deficiency are briefly summarized. During the drought an unusual number of inquiries were received regarding diagnosis and recognition of avitaminotic syndromes in animals, and it is apparent that the practitioner is in need of reliable information on this subject. Owing to the need of frequent revisions in keeping with the results of investigations in the field of nutritional disease, only a limited number of copies are available for distribution.

Drugs Used in Veterinary Medicine

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XI. IODINE—the Great Counterirritant

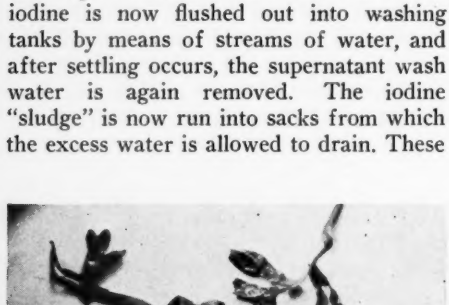
History.—One might suspect from its universal popularity that iodine has been handed down through the centuries, but it is only slightly more than a hundred years since this element carved a niche for itself in medical history. True it is that the seaweeds and sponges, as well as some terrestrial plants such as tobacco, cress, hemlock, sarsaparilla and garlic were used in primitive medicine as well as for the alkaline matter that they contained on being ashed; but there was little suspicion that these products of land and sea were the storage places for a most wonderful element.

The discovery of iodine is credited to Bernard Courtois, a French chemist who was the son of the manager of a saltpeter factory in Dijon, France. It was in the year 1811, while in the act of washing some ashes of the seaweed known also as "kelp," which at that time was largely employed as a source for the manufacture of soda, that Courtois applied heat to a copper kettle in which some concentrated sulphuric acid had by chance been added to the residue. He observed that violet fumes emanated from the vessel, and that after a time a dark substance in the form of lustrous metallike crystals collected on the inner surface of the container. Incidentally, he also discovered that the kettles became corroded, and while studying the origin of this phenomenon he finally concluded that he had hit upon a new substance. He was not cognizant of the importance of his discovery, but some of his chemist friends amongst them Gay-Lussac, were quick to enter into elaborate investigations of this unnamed element. Gay-Lussac suggested the term "iode" which referred to its violet-like character, but Sir Humphrey Davy who had discovered the active element fluorine, christened the newcomer as iodine. From the day of its accidental discovery, it was destined to become one of the most used items in present-day surgery and medicine. In fact, iodine has become a standby in the homes of this country; and there are few medicine cabinets that do not stock some preparation or other of these magic crystals.

Source.—For a long period after Courtois' findings, the element was prepared almost exclusively from the kelp or seaweeds which gather along the coastline of France, Ireland, Scotland and America when the sea is rough during the spring and fall. This plant material was heated slowly so that in the process there was as little of the precious product lost as possible since seaweed contains only from 0.1 to 0.2% of iodine. It can thus be seen that tons and tons of seaweeds were necessary before a practical yield was obtained. This method of obtaining iodine is still employed in some localities of Europe but most of the iodine is now extracted from another source.

At the present time, the principle source of iodine is an impure form of Chile saltpeter (sodium nitrate) otherwise known as "caliche." This crude material contains various amounts of iodine chiefly in the form of calcium iodate. In the process of treating the "caliche" for its sodium nitrate content this iodate is converted to sodium iodate from which the iodine is recovered briefly as follows: The sodium nitrate is allowed to crystallize out of solution and the remaining liqour is used over a period of from two weeks to three months by which time the liqour becomes saturated with sodium iodate representing from 1% to 3% of absolute iodine. This liquor is then led into tanks where the iodine is precipitated out of solution by means of sodium hydrosulphite which is made from the sodium nitrate itself. The iodine takes about three

days to finally settle out, and the supernatant liquid is then drawn off. The crude iodine is now flushed out into washing tanks by means of streams of water, and after settling occurs, the supernatant wash water is again removed. The iodine "sludge" is now run into sacks from which the excess water is allowed to drain. These



Bladderwrack, a seaweed containing iodine, iodine crystals and Chillean caliche, the principal commercial source of Iodine.

sacks are then subjected to pressure to reduce the moisture content, and iodine cakes or "cheeses" are thus obtained. These cakes of impure iodine contain about 75% of absolute iodine, 5% of salts (chiefly nitrates), and 10% of water. At this point the cakes are placed in iron retorts and the vaporized iodine allowed to condense along large earthenware pipes which are loosely connected by means of clay. When sufficient iodine has collected, the pipes are allowed to cool and the condensing system is disconnected in order to allow scraping of the inner surface of these pipes, and collection of the iodine. This product is 99.6% pure and is commercially known as "crude iodine."

In this form it is shipped to market in oaken kegs which are covered with hide. This commercial form of iodine, although a sublimed product of high purity, usually contains chlorine and bromine in small amounts. For this reason it is "resublimed." This is done by treating the "crude iodine" with a solution of potassium iodide and adding large amounts of water, after which the iodine precipitates, is collected and washed, and finally distilled in steam. This "resublimed" product is then dried in vacuum over some hygroscopic substance. Other methods such as the "cuprous iodide" process or electrolysis are used, but the one described is the most practical and popular.

Properties.—Iodine is a non-metallic element which belongs to the group of related elements known as "halogens" or salt-formers. It consists of bluish-black, steel-like scales or plates having a metal-like lustre, a peculiar irritating odor, and a sharp, acrid taste. It stains the skin a deep brown, but this is evanescent; and also destroys vegetable color. It is slightly soluble in water (1 part in 2950) and this is unstable in the presence of light; dissolves readily in alcohol (1 part in 12.5); in glycerin (1 part in 80) and in carbon disulphide (1 part in 4); and is freely soluble in chloroform, ether and aqueous solutions of iodides. Solutions in alcohol or water have a reddish-brown color, and those in chloroform and carbon disulphide are a purplish-violet. At ordinary temperature, it slowly sublimes passing directly from a solid to a gas; and when heated to about 114°C, (237°F.) it will fuse and gradually change to a purple vapor leaving only a slight residue. Because of its instability, iodine should be stored in amber bottles which have glass stoppers; and must be kept away from light. Cork, rubber and other organic materials will decompose the iodine and must be avoided.

Preparations. — Besides the crystalline iodine, which is official, the following are also recognized in the U.S.P. or the N.F.; Tincture of iodine (7% I & 5% KI); Compound Iodine Solution (Lugol's Solution) which is 5% I with 10% KI; Iodine Ointment (4%); Iodoform or triiodomethane (CHI_3) which contains 97% combined iodine; Thymol iodide (Aristol) which contains 45% combined iodine; potassium iodide; sodium iodide; ammonium iodide. There are also official, the stronger tincture of iodine (Churchill's tincture) which is 16½%; Decolorized tincture of iodine (5% strong); Solution of iodine and

zinc phenolsulphonate (Pyorrhea astringent) which is 20% strength; Phenolated solution of iodine (Boulton's Solution); Stainless iodine ointment (5% iodine); Iodoform ointment (10% iodoform); Dilute hydriodic acid (10% of HI); Iodine petroxolin (10% strong); Calcium iodobehenate ("Sajodin") containing 23½% combined iodine. There are many unofficial preparations including: Iocamfen (made of 10% iodine, 20% phenol, 70% camphor); Iodalbin (iodine and blood albumin); Iodipin (iodized vegetable oil); Iodol (tetraiodophyrrol); Iodothyrine (active constituent of thyroid gland); Iothion (diiodohydroxypropane); Siomine (hexamethylenetetramine tetraiodide); Iodostarine (iodine addition product obtained from tariric acid, a fruit acid); Lipiodol (iodized poppy-seed oil); Iopax (a pyridine and acetic acid derivative); Skiodan (a derivative of methanesulphonic acid). There is a crude drug official in the N.F. known as Fucus (bladderwrack) which is a seaweed common along the Atlantic Ocean shores and which contains small amounts of organically combined iodine. It has been largely used in certain patented teas used for "reducing," occurring as a dry black substance and used in making the N.F. fluid extract. There is a patented preparation on the market called "Iodex" in ointment form plain or combined with methyl salicylate which is said to have good counterirritant effects. Collosol Iodin is a preparation of colloidal iodine. Vioform (iodochlorhydroxyquinoline) and Iodex powder are two dusting powders used in place of iodoform. Vioform is used internally against amebiasis.

Action.—Externally, iodine is one of the most efficient counterirritants and antiseptics known. By most experiments that have been made recently, it has been shown to far exceed the mercurials, alcohols and phenols and were it not so irritant, it is possible that man would not attempt to improve upon the virtues of this invaluable medicament. It has great penetrating power, both upon the intact skin and into wounds, which probably accounts for its proficiency. The tincture is usually slow in its action giving a prolonged irritant effect on the skin and mucous membranes, although in the presence of much moisture it will allow the precipitation of the iodine and may cause the formation of blisters especially if it is confined. The absorption of small amounts causes it to reach the underlying glands and thus act as a resolvent in case of swellings.

Internally, iodine and its compounds such as the iodides act much the same, except for the local irritation which is less in the case of the iodides. Iodine or its compounds is absorbed through the mucous membranes and changed to iodides in the body, probably combining with the proteins later to form albumin compounds or other such complexes. It is readily eliminated as iodide soon after ingestion and is found in the mucous secretions, in the saliva, in the gastric juice and for the most part in the urine. Much of the effects of the absorbed portions of iodine or its compounds are found to be due to the activation of the thyroid gland by this element, since it is essential for its normal functioning. Marcela has found that iodine administered to rats increases their weight and sex development, and under the same influence cows have been reported to increase the volume and richness of milk. Small doses are considered to promote general nutrition, though this is not altogether accepted by some as an established fact. Recent investigation shows that iodine diminishes the viscosity of the blood, usually with larger dosage however. McCord found that potassium iodide depresses the irritability of the heart without affecting its contractility. Macht found a depressant effect on the heart and arteries with potassium iodide and not sodium iodide indicating that the potassium ion may be the agent involved. In very great dilution, the iodides probably cause dilation of the arterioles. In the respiratory tract there appears to be an affinity of iodine for the epithelium where it may cause a marked irritation and an increased flow of mucous in the nostrils, throat and bronchi. This is probably due to salt action. It has been found that iodides are harmful in pulmonary tuberculosis since

Dose Table

	Iodine	*Tincture of Iodine*	*Potassium Iodide*	*Lugol's Soln.*
H	ʒss-i(2.-4.)	ʒii-iv(8.-15.)	℥.ss-i(15.-30.)	ʒii-iv(8.-15.)
C	ʒss-iss(2.-6.)	ʒiii-vi(12.-24.)	℥.i-iss(30.-45.)	ʒii-v(12-24)
S	gr.x-xx(.6-1.3)	mxx-xL(1.3-2.6)	gr.x-ʒss(.6-2.)	mxx-xL(1.3-2.6)
D	gr.ii-v(.13-.3)	mii-x(.13-.6)	gr.ii-x(.13-.6)	mii-x(.13-.6)

guinea pigs were killed due to a softening of the caseous matter and interference with connective tissue formation, according to Sorel and Butler. It has also been shown that necrotic tissue in cases of tuberculosis and other diseases retain more iodine than other tissue, the iodine rendering inert the enzymes which otherwise would prevent the resolution. Thus the bacteria are set free and spread infection throughout the system.

Therapeutics.—Iodine in the form of the tincture or stronger solutions is indicated as a counterirritant in reducing inflammation in case of arthritis, synovitis and edema or when there is a swelling due to trauma. The compound solution (Lugol's) is sometimes injected directly into cysts or enlarged bursae, but this is a heroic treatment and may end in a gangrene. It is also sometimes injected directly into the thyroid gland in case of goiter and the ointment has been very useful in reducing local glandular enlargement, such as lymph nodules. Iodine preparations are widely used locally for treating such skin conditions as eczema, chronic mange, favus and ring worm. For its antiseptic qualities it has an established place in fresh wounds or chronic lesions; and is a part of the pre-operative routine for most surgical procedures. It is also indicated as an irrigation for the female genital tract in metritis of cattle. For this purpose dilute Lugol's solution has wide use. The potassium iodide present in this preparation prevents the iodine from precipitating out on the sensitive vaginal mucosa. The tincture is applied to the cord in obstetrical cases in full strength to prevent septic infection. Iodoform has been used because of its soothing as well as antiseptic properties, but it is easily absorbed from wounds and has some special effects on the nervous system, in some cases, it poisons the animal and for this reason it must be used cautiously. Thymol iodide is often used in place of the iodoform, but it is considered less effective and also is unstable once it makes contact with the tissues.

Internally, the iodides are administered in relatively large doses as a specific in actinomycosis along with external iodine therapy. It is similarly used in the treatment of botryomycosis. It is also indicated in chronic types of rheumatism, and less so in acute cases. It is of service as a resolvent in hyperplastic conditions such as swelling due to chronic inflammation or glandular congestions, and is often effective in removing fibrous and colloid goiter as well as in preventing the formation of this condition in new-born animals, by feeding small doses to the dam during the latter portion of gestation. Chronic pleuritis, pericarditis and ascites are treated with potassium iodide since absorption is stimulated and there is a secondary diuretic effect. Potassium iodide or Lugol's solution has been thought to give beneficial results in periodic ophthalmia in horses when given internally and applied on pads over the eyes, or even injected (2cc of Lugol's) into the fatty tissue over and back of the eyes. In inflammations or effusions involving the spinal cord or brain such as meningitis it has been used with surprising results. Although potassium iodide or its preparations are mostly used internally, sodium iodide which is less irritant, ammonium iodide which is more irritant, and hydriodic acid whch is used in 10% strength or as a syrup (1%) are all substitues.

Toxicology.—When preparations of iodine are applied externally too often or in

too great concentration, or when there is perspiration or water on the surface of the body it produces a marked irritation which may result in the formation of vesicles. If the tincture, for example is accidentally swallowed in rather large amounts the irritation will cause vomiting, gastric pain and purging, may supress the urine and cause collapse. If inhaled, it may produce a pulmonary edema due to inflammation of the lungs. The treatment in such cases should seek to dilute the stomach contents using large draughts of water, and follow this with starch suspension.

When iodides are given in too great dosage or too often, there may be local effects such as pain in the stomach, enteritis etc. Chronic "iodism" is due to continuous dosage and is thought to be due to a liberation of elemental iodine in the system from the compounds ingested. The symptoms include what resembles a chronic "cold" such as sneezing, running nose, laryngitis, excessive salivation, lachrymation, conjunctivitis, and at times a dermatitis. There is also loss of appetite, emaciation, nervous irritability, anuria, tachycardia and loss of sexual power all of which are considered to be due to the influence of the excess iodine on the thyroid gland. There is a general loss of body tone, and the spirit of the animal is depressed; and in extreme cases there may ensue atrophy, paralysis and blindness. It should be noted that the susceptibility to iodides varies with the animal, symptoms arising a few hours after administration with some while in other instances there are no signs except after long continued use. The treatment in these cases consists of stopping the administration of the drug, providing for rapid elimination ,giving alkalies such as bicarbonate of soda, and in case of catarrhal symptoms using calcium lactate for a few days. In the case of iodoform, there are a special series of symptoms including gastro-intestinal disturbances, cerebral excitement or delirium, and cerebral depression or coma. Death here is due to a paralysis of the central nervous system. The treatment consists of removing the source of the poisonous iodoform, giving symptomatic treatment according to the stage of cerebral stimulation or depression, subcutaneous or intravenous injections of physiological saline, and oral doses of sodium bicarbonate. With all of its virtues, iodine and its preparations or derivatives must be handled with due regard for its possible deleterious effects since some animals show a hypersensitivity toward the drug.

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BUCKEYE POISONING IN A COW

One Sunday morning, I was called to a farm and found a cow down flat on her side, with the rumen much distended. She was having convulsions, somewhat similar to those of strychnine poisoning in dogs, about every 15 minutes. The patient was in very great distress, especially when the convulsions were active. A considerable gallery had collected and at each convulsion it was freely predicted that the next fit would take her off. The diagnosis was poisoning from eating buckeye leaves.

The use of a trocar gave some relief. I then had her propped up in a natural position and gave a purgative drench, to which had been added 2½ grains of potassium permanganate. After waiting another 15 minutes, we pulled her up to her feet with a block and tackle, but due, I think, to the trait of stubbornness natural to all members of the bovine family, she refused to stand. I then gave her 5cc of camphorated oil hypodermically.

The weather was fine; it was already too late for church, and as I had nowhere else to go, I sat around and talked about everything I could think of except politics and religion for about two hours, all the time keeping an eye on the patient. She did not have any more convulsions, and I thought I could see an improvement in her condition, so I suggested that we lift her up again. This time she consented to stand and when I left a few minutes later, she was walking around and made an uneventful recovery.

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Abstracts

Feeding for Fertility

Aside from wheat bran and wheat germ oil, there seem to be no feeds which possess a direct influence upon the sexual function[1]. Possibly the introduction of sexual hormones and of vitamins into the female organism may produce results. At the present time, ovulation may be stimulated by certain dietary measures which will condition the animals.

* * * *

Baby Pig Vaccination

Investigating the possibilities of a single simultaneous vaccination of nursing pigs against hog cholera, it was found[2] that 20cc of serum and 2cc to 3cc of virus will protect six-week-old pigs for seven to eight months against a potent natural exposure. The immunity will last seven and one-half to nine months against a powerful artificial infection. Growth and weight increases were not disturbed.

* * * *

Abscesses Following Castration

After castration,[4] a rectal examination will be necessary whenever the severity of the general condition of the gelding can not be attributed to minor local or external lesions, or whenever a rise in temperature, accompanied by emaciation is found, in spite of good healing.

The subperitoneal abscesses, occurring after castration, are found laterally in the region of the abdominal ring. If they do not communicate with the castration wound by means of a fistular duct, then the pus is to be drained by lancing the abscess from the flank. Spontaneous healing following rupture of the abscess into the intestinal canal, has been observed.

The collection of subperitoneal fluid in form of cysts may fill the posterior half of the abdominal cavity and may reach back into the pelvis. A cure may be accomplished by lumbar incision.

* * * *

False Tumors in Dogs

A bitch, suffering from stomatitis and ulcerative dermatitis, exhibited disorders of the sexual functions.[3] The autopsy revealed a chronic interstitial nephritis and seemingly tumors of the pancreas and of two cervical lymphnodes. The histological examination disclosed these tumefactions to be merely sclerosis of the respective organs. The author explains the clinical symptoms on the basis of a glycemia caused by the sclerosis of the pancreas.

* * * *

The Contamination of Water with Yperite and Its Purification

Gorniewicz[5] points out the grave danger from stagnant water contaminated with yperite (dichlorethyl sulphide, mustard gas, named for Ypres, a town in Belgium where this gas was first used in warfare, at the Second Battle of Ypres, April, 1915). The danger from contaminated running water is not as great. Yperite dissolves and hydrolyzes only to a minimum degree. Its presence is detected in the easiest manner by the reaction of Grignard. Considerable water is needed to make the test.

The purification of water contaminated with yperite is effected by facilitating hydrolysis by filtering through cloth or charcoal and boiling.

The author insists upon the necessity of the veterinary service preparing for defense against poisonous gases by special organization and protection of units placed under its care: abattoirs, markets, etc. Such pro-

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[1] Kossmag, M., 1935. Ist das Ausbleiben der Brunst durch Fütterungsmassnahmen zu heven? (Can Barrenness be Prevented by Dietary Measures?) *Tierärztl. Rundsch.*, 41:26, pp. 420-4.

[2] Hupbauer, A., 1935. Zur Frage der Immunitat und Immunisierung von Sang ferkeln gegen Viruschweinepest (Vaccination of Nursing Pigs Against Hog Cholera). *Wien. Tierärztl. Monatschr.*, 22:8, pp. 229-237.

[3] deBock, J., 1935. Pseudstumoren bij het hond. (Pseudo-Tumors in Dogs). *Vlaainsch. Diergeneesk. Tijdschr.*, 4:4; pp. 104-6.

[4] Bolz, W., 1935. Subperitoneale Abszesse und Zysten nach der Kastration des Hengstes und ihre Behandlung (The Treatment of Subperitoneal Abscesses and Cysts, Following Castration of Stallions). *Tierärztl. Rundsch.*, 41:26, pp. 415-7; 41:27, pp. 434-7.

[5] Gorniewicz, G., 1935. Defense Against Gas Warfare in the Veterinary Service. *Wiadomosci Weterynary jne.*, 12, pp. 400-10. Abst., *Revue de Pathologie Comparee*, 39:167, Aug. 1935, p. 291.

tection requires adequate education of the veterinary personnel and a complementary technical management.

FOWL PARALYSIS

The bacterial theory that fowl paralysis and leucemia are caused by certain members of the paratyphoid and typhoid groups of bacteria is advanced.[6] A number of factors are involved in infection, chief among which is that enteritis caused most often by intestinal parasites is in most instances a necessary predisposing factor.

The intra-yolk sac injection of *S. aertrycke* in baby chicks induces a septicemic disease. The repeated intravenous injection of *S. aertrycke* in birds over 12 weeks of age resulted in hemocytoblastosis, fowl paralysis, myeloid leucosis, erythroleucosis, "light" and anemia. Lymphocytoma occurred as a complication in some instances. Only in the case of septicemia could the causal micro-organism be isolated from the tissues of experimental birds. Hemocytoblastosis developed shortly after first exposure to the causal micro-organism and persisted throughout the incubation period; some birds, however, recovered from hemocytoblastosis in four to five months after infection without showing other pathologic manifestations. It was necessary to expose yearling hens to twice the number of *S. aertrycke* required in 12-week-old birds to obtain comparable results. The incubation period of fowl paralysis induced by repeated intravenous injection of *S. aertrycke* was from 11 to 147 days; of leucemia from 27 to 253 days, and of anemia and "light" from 12 to 31 days.

This publication is the first of a series which will deal with a study of the etiology of this group of diseases. The introduction gives a history of fowl paralysis and leucemia with particular reference to theories as to the etiology of the disease that have been held in the past. The author is indebted to the Purina Mills, St. Louis, Missouri, for aid in the preliminary investigations associated with these studies.

[6] Emmel, M. W., 1935. The Etiology of Fowl Paralysis, Leucemia and Allied Conditions in Animals. I. Introduction. History and a bacterial theory of the etiology of these diseases. II. The intravenous injection of suspensions of *Salmonella aertrycke* in the chicken. Florida Agr. Exp. Sta. Tech. Bul. 284.

MACHINE MILKING AND MILK PRODUCTION

Carefully controlled[7] tests in which conditions which might affect the results were held reasonably uniform revealed that cows milked by hand gave slightly more milk and were more persistent in maintaining production throughout the lactation period than were cows milked by machines. The percentage of milk fat was not affected by the method of milking, and the differences in production were evident only after the third month of the lactation period. It is believed that the length of time the machines were left on the cows was largely responsible for the showing made by the machines. The results are not interpreted as being adverse to the use of milking machines, but rather emphasize the need for correct operation.

RABIES INFECTION IN GUATEMALA

Rabies has occurred in Guatemala[8] for many years. No special treatment was given until 1915, when the Anti-Rabies Institute was founded.

The number of persons bitten by rabid animals varies in different parts of the Republic, being greatest in the Departments of Guatemala, San Marcos, Retalhuleu, Alta Verapaz, Sacatepéguez and Sololá.

The season has no influence on the number of persons bitten as it is approximately the same, month by month; indicating antirabies measures should be maintained with the same intensity throughout the entire year.

The anti-rabies treatment used in the greatest number of cases has been the Pasteur method; a small number of cases were treated with vaccine made by the Hogyes

[7] Dahlberg, A. C., 1935. The Influence of Machine Milking upon Milk Production; New York Agr. Exp. Sta. Bul., No. 654.

[8] Penedo, Eranique, 1934. Rabies Infection in Guatemala. *Boletin Sanitario de Guatemala*, 5:41, Dec. 1934. Trans. by J. Gilbert Horning.

method. Vaccine made by the Semple method has been used in all cases for the last two years. The Semple vaccine has proved best for Guatemala and has given wonderful results even in very severe cases. In 19 years, there has been only one case of vaccine paralysis in all the cases treated, again proving how extraordinarily rare this condition is.

The rapid means of transportation makes for efficient coordination and prophylaxis against rabies; improved sanitary conditions also assisted in creating better health of the people.

The first fixed rabies virus obtained from dogs in Guatemala was prepared in 1932 and employed in a preparation of vaccine in order to give it a greater guarantee.

The number of persons bitten by rabid animals treated at the Anti-Rabies Institute has doubled in the last two years; this is, no doubt, due to the fact that the public is better informed about this improved treatment.

The larger number of cases treated with anti-rabies vaccine affords a greater opportunity for observation as to the best method and dosage, and will serve to prove the true value of this wonderful work.

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BRUCELLOSIS IN HORSES

Equine brucellosis appears to take on new importance every day. Until recently, *Brucella* infections in horses have been regarded solely as being vaguely associated with fistula of the withers, poll-evil and other purulent troubles. Their primary manifestations, despite their importance, have remained among the unknowns of clinical medicine, obviously having been attributed to other causes. Rossi,[9] director of the veterinary service of Soane-et-Loire (France) has published a report on observations made on a number of horses under his supervision. In it is given, for the first time, the symptoms of generalized brucellosis in horses. The affected horses run a temperature between 38.5° and 40.° C. (101.3° to 104° F.), rebellious to all antipyretic treatment, and which often takes on an undulant character, rising and subsiding at intervals of 15 to 20 days. In this respect it resembles infectious anemia (swamp fever) and tuberculosis. At work, the horse is weak and loses flesh although the appetite remains excellent. The pulse is feeble and does not exhibit the usual synchronization with the temperature. There is no anemia, but always a hyperleucocytosis. Some victims are rheumatic and stiff-gaited. Some of the mares abort, although abortion is by no means common, nor is it characteristic of the illness. Only a minority develop local suppurative manifestations, but when suppuration does occur, it shows a pronounced predilection for the withers, poll, sternum, coxo-femoral articulation, buttock musculature, atriculations of the foot, etc.

The abscesses of equine brucellosis appear suddenly and without any apparent cause. They point spontaneously and discharge a serous issue rich in *Brucella* organisms of the bovine variety. (The author believes, however, that the melitensis variety can also infect the horse). The flora of the discharge, of course, becomes mixed from secondary invaders after the abscess has opened. In the initial discharge only, the *Brucella* organisms are present. When found side by side with staphylococci in the fistulous tract, the latter are to be considered as new guests.

Brucellosis was found to exist most frequently on farms where Bang's disease was present among the bovine inhabitants of the premises, although contact with cattle is not indispensable to brucellosis in horses.

Experimentally, horses were infected by way of the mouth, the conjunctiva, the skin and venous blood. To natural infections, horses showed a higher resistance than cattle, but the author insists that the horse plays an essential rôle in the natural contamination. Susceptibility does not vary with age nor breed.

Except for the local complications, which

[9] Rossi, P. La brucellose des *équidés* (Brucellosis in Horses). *Revue Générale de Médicine Vétérinaire.* 43: 506, February, 1934.

are economically grave, brucellosis in horses is not a serious disease. Its importance lies in the possibility of spreading the disease among cattle and human being. Of this possibility there seems to be no doubt.

The diagnosis is made, as in cattle, by means of the agglutination test. The author mentions an ophthalmic, intradermal and hypodermic reaction as optional methods of diagnosis and describes a special antigen employed for these purposes.

PREMUNITION IN JOHNE'S DISEASE

As paratuberculous enteritis exists in several departments of France and causes considerable loss, the authors[10] attempted to control the disease by means of premunition (preventive vaccination). As is well known, Johne's bacillus is quite innocuous even without attenuation. A live-culture vaccine was made from the organism. It was composed of 5 to 10 mg. of unmodified cultures suspended in an unabsorbable excipient of mineral oil and porphyrized pumice. This was injected subcutaneously. A hard, persistent, sclerotic nodule appeared at the point of injection. In non-infected animals the vaccinal lesion persists for months, often as long as a year and during its sojourn the vaccinated animal is preminuzed against the disease; that is, it cannot be infected naturally or experimentally. In infected animals, the vaccinal nodule disappears by progressive absorption in two or three months and sometimes abruptly.

The efficacy of the method was demonstrated absolutely on 133 farms badly infected, containing 5,560 animals and partially demonstrated among 800 cattle divided among 20 farms from which the disease could not be entirely eliminated. In the cases that persisted, the vaccinal nodule was absorbed or it suppurated, indicating that infection preceded the vaccination.

Carried out in conjunction with the slaughter of the infected animals, this method of eradication of Johne's disease is inoffensive and efficacious; preventing spread of the infection while the infected animals are gradually eliminated from the herd.

[10] Vallee, H., Ringjard P. and Vallee, M. Sur la Prémunition de l' Entérite Paratuberculeuse des Bovidés. *Rev. Gén. de Méd. Vét.*, 43:516, Dec. 1934.

WEIGHT GAIN IN NEW-BORN CALVES

Studying the problem of natural nursing among Gascogne cattle, Pons[11] found that there is often a slight loss in weight after birth, especially in those calves which show a heavy weight at birth. He found further that it takes these calves a comparatively long time to reach their normal weight curve, while those born underweight will accumulate weight much faster. The fastest growth occurs in the second week.

SUSCEPTIBILITY AND RESISTANCE TO DISEASE

In his monographical[13] presentation of the problem of immunity, Basset declares that the fate of the microbe in the body is determined by the ability of the bacterial protein to assimilate the protein of the host animal. Phagocytosis is of secondary importance. The specifity of the bacterial action depends probably upon the chemical constitution of the bacterial protein.

PROTEIN SENSITIZATION IN CATTLE

When a handful of a certain nitrogenous fertilizer[14], obtained from grated horn substance, was strewn on land where cattle were plowing, these animals began to exhibit symptoms of excitement and fright immediately and finally started to run away. The hypersensitivity did not affect all animals, but ostensibly those which were sensitized. The phenomenon disappeared as soon as the fertilizer was covered with soil.

[11] Pons, P., 1935. Contribution to the Problem of Natural Nursing of Calves (Trans. Title). *Rev. vét. et Jour. de Méd. Vét.*, 87:3, pp. 166-95.

[13] Basset, J., 1935. Immunity (Trans. Title). *Rev. vét. et Journ. de Méd. Vét.*, 87:2, pp. 65-128.

[14] Darraspen, E., and A. Saint-Martin, 1935. Protein Sensitation in Cattle (Trans. Title). *Rev. vét et Jour. de Méd. Vét.*, 87:5, pp. 276-8.

AN EFFECTIVE ANTI-DISTEMPER SERUM

A number of non-immune mature dogs were injected[12] with 20cc of a formol distemper virus, prepared according to Lebailly. Ten to 12 days later, the dogs were killed and their blood was pooled. The serum thus obtained aborted distemper in the early stages. When used in the later stages, it influenced the symptoms, caused by complications, favorably. The serum should therefore be used in all cases. In aggravated cases, of course, the serum may be ineffective. The injection of serum and the exposing of the injected dogs to natural infection will increase the resistance produced.

BACTERICIDAL EFFECT OF ULTRAVIOLET RAYS

The ultraviolet rays[15] of the mercury-quartz lamp are capable of killing bacteria after a short exposure. The length of time depends on the species tested. The bacterial energy of the ultraviolet rays constitutes a suitable method of testing the permeability of different kinds of glass to ultraviolet rays.

ICTERUS OF SHEEP

Hemorrhagic icterus[16] in sheep occurs in an acute and in a chronic form; the latter, usually, constitutes the terminal stage of the disease. In the acute form the icterus is accompanied by a dark urine, severe disturbance of the general condition, great debility and inappetence. The number of erythrocytes in each cubic centimeter of blood decreases to six million. The blood serum appears intensely red. The course of the disease is rather swift. Death occurs in two to three days.

In the chronic form, the appetite does not entirely vanish. Recovery may take place in about 14 days. Prognosis is important on account of the frequent abortions, the high mortality rate and the lack of proper remedial measures. The exciting cause is unknown.

POSSIBLE DANGER IN FLUKE CONTROL

The striking similarity of the symptoms of hemorrhagic icterus[17] to those of copper poisoning suggested the investigation of the rôle of copper in the etiology of that disease. Subsequent chemical analysis of organs of sheep in which hemorrhagic icterus was diagnosed, revealed an increased deposit of copper in spleen, liver, kidneys and heart.

DIAGNOSIS OF UTERINE TORSION

The arteries situated in the wall of the vagina are an excellent medium for the diagnosis of a torsion[18], especially when it is impossible to feel any folds. This happens when the torsion is in the region of the vagina. The arteries are easily palpated and are naturally bound to follow the slightest torsion.

DOGS "WORMED" WITHOUT ANTHELMINTICS

After the distal parts of the intestinal tract have been evacuated properly, luke warm water is infused until the dog starts to vomit.[19] The infusions are repeated until the intestine and the stomach are completely washed out. This procedure will wash out any parasites present; removing them in the vomited water. This simple and inexpensive method can be recommended for the expulsion of worms in dogs, provided the dog is not too young, or suffering from a cardiac defect.

[12] Plantureux, E., 1935. The Production and Application of a Specific Anti-Distemper Serum (Trans. Title). *Rev. vét. et Jour. de Méd. Vét.*, 87:5, pp. 257-62.

[15] Dahmen, H., 1935. Untersuchungen über die bakterizide Wirkung der ultravioletten Strahlen (Bactericidal Force of Ultraviolet Rays). *Tierärztl.* Rundsch., 41:43, pp. 689-92.

[16] Cuillé, J. and P. Chelle, 1935. Hemorrhagic Icterus in Sheep (Trans. Title). *Rev. vét. et Jour. de Méd. Vét.*, 87:1, pp. 5-13.

[17] Lafenétre, H., L. Monteil, and F. Galtier, 1935. Is Hemorrhagic Icterus of Sheep Caused by Copper Poisoning? (Trans. Title). *Rev. vét. et Jour. de Méd. Vét.*, 87:5, pp. 263-75.

[18] Chavance, J., 1935. The Importance of the Vaginal Arteries in the Diagnosis of Genital Torsion in the Cow (Trans. Title). *Rec. de Méd. Vét.*, 111:4, pp. 204-7.

[19] Sokola, G., 1934. Expulsion of worms in dogs by means of paranal lavage (transl. title). *Jugoslovenski Veterinarski Glasnik* 14(4): 176.

Book Reviews

Proceedings of the Twelfth International Veterinary Congress, New York, August 13-18, 1934. Three Volumes, 1534 pages; paper bound; published by the Government Printing Office, Washington, D. C. Price $5.00. May be obtained from Dr. John R. Mohler, Washington, D. C., under whose direction the report was published, or from the office of VETERINARY MEDICINE.

If there is any veterinarian in America who does not know that an International Veterinary Congress was held in New York City in 1934, it is probably vain to attempt to inform him. If any do not know that the meeting marked a climax in the long period of progress of veterinary medicine on this continent, it cannot be for the want of having been told. It would appear that the announcement that a printed report of the proceedings of that memorable meeting are available for public distribution should be all that is necessary to bring an order for it from every veterinarian in the land.

However, to whet the anticipatory pleasure of receiving a copy, it may be mentioned that the proceedings include 82 papers on new developments in veterinary science and related subjects as presented by the leading veterinary scientists of the world. Approximately half the papers are printed in English, the remainder being in French, German or Spanish. A summary of each paper appears in all four languages. Thus those who read only English will find half the papers in full and abstracts of all of them in a language with which they are familiar. A brief description of these 82 papers was given in this magazine at the close of the Congress (V. M. 29:10, October 1934).

In addition to the discussions on the more familiar animal maladies, including those of poultry, there are contributions concerning diseases of young animals, psittacosis (parrot fever), blood-group research, deficiency diseases and relationship of genetics to the physical well being of animals. Numerous papers deal also with improvement of methods and technique used in research work and in the diagnosis and treatment of animal diseases. The Proceedings include also discussions of papers, radio addresses broadcast during the Congress, resolutions, a list of those in attendance, and descriptions of exhibits and other features. The three volumes comprise more than 1,500 pages of text tabular matter and illustrations. More than 4,000 copies have already been distributed to members of the Congress and scientific libraries.

It affords one of the few opportunities a veterinarian has to get a veterinary work at far less than the cost of publishing it, since much of the cost of the report was made up of subscriptions (other than membership fees) of veterinarians and veterinary associations and an appropriation by the Federal government.

* * * *

Diseases and Parasites of Poultry, by Edgar Hugh Barger, D.V.M., Pathologist in the Illinois State Department of Agriculture, and Leslie Ellsworth Card, Ph.D., Professor of Poultry Husbandry at the University of Illinois, Urbana, Ill. 354 pages, 73 illustrations, one color plate; published by Lea & Febiger, Philadelphia. $3.75.

"The authors have collected the salient facts and findings of research in the field of poultry diseases and presented them in a concise and interesting manner.

"Attention is directed to the peculiar nature of poultry disease control. Because of the low unit value of individual birds, poultry diseases assume their greatest importance in the mass, and the owner is more concerned with maintaining the health of the flock than he is with the treatment of individual units. Consideration is likewise given to the fact that many of the ailments of poultry are due to living infectious agents which are readily transmitted through the soil of the yard, the feeding and watering utensils, and by too close contact. Emphasis is also given to the important group of diseases due to inadequate diets.

"The discussion of the diseases has been arranged according to the type of etiological factors involved—those due to bacteria, viruses, protozoa, nutritional disorders, miscellaneous conditions, poisons, or internal or external parasites. Under each separate subdivision is discussed the cause,

occurrence, symptoms, postmortem appearance, methods of diagnosis, mortality and treatment.

"These writers have added two interesting chapters, "The Mortality Problem" and "The Nature of Disease," not usually found in similar books on this subject. The more recent developments in poultry surgery are included in a chapter under that heading. The short section on modern laboratory procedure will be of value to those interested in making a postmortem examination and laboratory diagnosis.

"The appendix is devoted to a discussion of the use of drugs and disinfectants. A short list of the important references is included at the close of each chapter."—*L. D. B.*

This is another of several attempts in recent years, to prepare a text on poultry diseases useful to: "(1) Flock owners whose income depends to a large extent upon their ability to maintain healthy flocks of poultry; (2) practicing veterinarians who are trying to render the greatest possible service to a poultry clientele; (3) students of agriculture . . . who have need of a ready source of information on the subject of avian pathology," and (4) veterinary students. We believe it comes nearer than its predecessors to succeeding in a field where none can be entirely successful.

The varying points of departure from which these four different classes approach the subject of disease in the poultry flock, we think, renders it impossible to adapt a single text to the needs of all. The elemental nature of the discussion, particularly the nature of disease, anatomy of the fowl, methods of making a postmortem examination etc. necessary to bring the text within the comprehension of the flock owner, makes it tiresome for the veterinary practitioner; and just to the extent that text matter in which the latter is interested is diluted by or buried in matter to him uninteresting, will he be disinclined to read those parts of the discussion that under more favorable circumstances, he would find interesting and highly informative.

There is the further disadvantage, and in this case it is a considerable one, that every purchaser must pay for the material thought necessary for the other classes of readers. In other words, "Diseases and Parasites of Poultry" contains excellent, up to date material on the subject, much needed by the veterinary practitioner generally, but unfortunately, it contains along with it a very considerable amount of discussion in which practitioners will have little or no interest, but for which they must pay to get the part desired. This, we believe, will materially lessen its distribution among veterinarians, the class among which its chief opportunity to serve the poultry industry lies. It would appear that there is still a field and a market for a scientific treatise on poultry diseases intended solely for veterinary practitioners and perhaps veterinary students.

* * * *

Elementary Veterinary Science for Agricultural Students, Farmers and Stock-Keepers, by Henry Thompson, M.R.C.V.S., formerly Lecturer on Veterinary Science at the Aspatria Agricultural College. Fifth Edition, revised by A. C. Duncan, F.R.C.V.S., B.Sc., Lecturer in Veterinary Science at the Royal Agricultural College, Cirencester. 465 pages, 84 illustrations; published by William Wood & Company, Baltimore. $4.00.

This is a revision of "Thompson's Veterinary Lectures," which has been a standard text on veterinary science for agricultural students in England for 40 years, and has had a large distribution in the United States throughout that period. The subject matter is presented in a direct, concise, forceful manner that no doubt accounts in large part for the long continued popularity of this text. Mechanically, the work is of the high quality customary from the house of William Wood and Company.

It is in no sense a professional veterinary work. Its scope and size preclude that. Dealing as it does with all the subjects of special pathology, with veterinary surgery including subdivisions on lameness, dentistry, shoeing and obstetrics, with materia medica and pharmacology, together with a modicum of anatomy, physiology, bacteriology and chemistry, it includes in its 465 pages discussions which, in standard veter-

inary texts, occupy ten thousand pages and curiously, nowhere is there a suggestion that its discussions are not complete.

Naturally, much of the information contained in this work is useful to the live stock raiser. One can think of hardly any part of it that is wholly useless, and still less in itself harmful. The chief fault of the work, and it is a grave one, is its tendency, apparently intentional, to lead the student to think the discussion complete and that he is therefore in a position to act upon the information given. There is no recognition of the fact that the intellect seems to the user to be an apparatus already perfected, needing no exercise or instruction, but sprung into being ready to carry out its functions without flaw or friction, and having no need for practice or a sound technique, matters universally recognized as requisites for the functioning of physical organs and aptitudes; in short, no recognition of the observation of Pope, that: "A little learning is a dangerous thing." It would seem that throughout a work of this nature, it should be emphasized that the aim is to enable the owner of animals to recognize deviations from health and normal function; to know when to call for professional help and to enable him to judge intelligently the quality of the veterinary service he gets. It further seems, to accomplish these purposes, that the reader should be cautioned repeatedly not to launch upon the treatment of his own animals or the animals of others upon the meager information given in the text.

It seems strange that a work dealing with elementary veterinary science should absolutely disregard all veterinary science except the most elemental, and from the introduction to the index, afford not the faintest suggestion of its existence. To sum it up, "Elementary Veterinary Science," is just another of those every-man-his-own-horse-doctor books, the whole of which have completely failed to improve the standard of veterinary service for the live stock industry in the century and a half since their first appearance in this country.

A Guide to the Study of Special Veterinary Pathology, by Russell A. Runnells, D.V.M., M.S., Associate Professor of Veterinary Pathology, Iowa State College, Ames, Iowa. 218 pages; published by Collegiate Press, Inc., Ames, Iowa. $3.00.

This work, as the title indicates, is but a guide to the study of special pathology, and not intended as a text on that subject. Of its adaptability to that purpose for veterinary students, the reviewer is not qualified to judge. However, he has been under the impression that guiding the student is a function of the instructor. Veterinary practitioners in search of information concerning specific diseases and other ailments of animals will, we think, be disappointed, probably because the text is not intended to serve that purpose. The data included are of the scantiest, and even in the brief consideration of diseases given, the practitioner will find the discussion not always in accord with his experience.

For example, we are told that "sand may appear in the stomachs of horses shipped in cars bedded with sand, also in horses fed on picket lines." But, it is not mentioned that this sand is ingested by horses only when it contains a large admixture of feed. And again, that "results depend upon the nature of the foreign bodies—small, blunt ones are harmless." Does this imply that eating sand in any quantity is harmless?

To cite another example, we are told that in rabies there is an "absence of characteristic gross lesions." Yet, before the discovery of negri bodies, rabies was diagnosed, post-mortem, by the gross lesions as reliably as it now is by microscopic examination. And again, we are told that mad itch or pseudo-rabies in cattle is "characterized clinically by an absence of furor." We think only those who have not seen the disease will agree with the author.

The omission of any reference to disorders of the skeletal and locomotory systems disqualifies the text as an aid in equine medicine, and handicaps it in dealing with animals other than the horse. In its utilization much supplementary reading is demanded and this makes it particularly unfortunate that the selection of references, likewise, is not above criticism, in that

sometimes at least, the author has cited not the original work on the subject, but compilations of some later writer, thus contributing to historical inaccuracies.

* * * *

The Physiology of Domestic Animals, by H. H. Dukes, D.V.M., M.S., Professor of Veterinary Physiology, New York State Veterinary College, Cornell University; with a chapter on The Physico-Chemical Basis of Physiological Phenomena, by E. A. Hewitt, D.V.M., Ph.D., Associate Professor of Veterinary Physiology, Division of Veterinary Medicine, Iowa State College; a part on Reproduction, by G. W. McNutt, D.V.M., formerly Associate Professor of Veterinary Anatomy, Division of Veterinary Medicine, Iowa State College; and a Foreword, by H. D. Bergman, D.V.M., Professor of Veterinary Physiology and Pharmacology, Division of Veterinary Medicine, Iowa State College. Third revised edition; 643 pages, 168 illustrations; published by Comstock Publishing Co., Inc., Ithaca, New York. $6.00.

This work was reviewed when it first appeared in planograph form, and what was there said of its merit applies equally to the third edition, with the addition that the work is now presented in printed form with excellent illustrations, making a splendid text.

It seems well adapted to the needs of the veterinary student, but perhaps the reviewer should withhold a more definite opinion as to its usefulness in that field. Veterinary practitinners will find it particularly useful, having studied physiology, as most of them have, from texts more or less adapted from human physiology and lacking the direct application to animals that the present text exhibits outstandingly.

Likewise they will welcome particularly the systematic discussions of hormones and of nutrition, both subjects in which scientific advances of recent years have made earlier conceptions on these subjects quite obsolete. No amount of experience can wholly divorce the interpretation of pathological processes—diagnosis—from a sound basis of physiology, and to the extent that the reader can improve his conception of physiological processes from this text, will he improve his diagnosis, consequently his treatment, and, on the whole, his success in practice.

Hemodynamometrie, by Louis Desliens. 544 pages, 148 illustrations. Published by Vigot Freres, Paris, 1935. Price 75 francs.

This fascinating work on arterial, venous and cardiac hemodynamometry in veterinary medicine is written from the personal researches of a country practitioner extending over a period of twenty-five years. It contains a foreword by Dr. Paul Portier, professor of comparative physiology at Sorbonne. It describes new and simple methods of registering blood pressure in animals, and its clinical interpretation, together with a section on blood transfusion.

The work is divided into five parts:

The first part opens with the subject of transcutaneous puncture of arteries which the author described before La Société de Biologie in 1923 when he pointed out the ease, harmlessness and immense potentiality of that procedure in veterinary therapeutics.

The second part describes methods of exploring the circulatory apparatus; arteries, deep and superficial veins and the right cavities of the heart, all of which can be accomplished without inconvenience to the animal and without any mutilation.

The third part concerns physiological researches: new and important ideas on vasomotor reflexes; the effect of muscular contractions on circulatory propulsion; on the value of blood pressure, which has never been satisfactorily appraised; new methods of computing the speed of blood and the duration of its revolution.

The fourth part is devoted to physiopathology and the views of the author on the evaluation of blood pressure in various diseases and disease groups. One of its chapters discusses cardiac arythmia, particularly of the horse.

The fifth part is the most interesting to the veterinary clinician, being devoted entirely to pharmacodynamic studies based upon intra-arterial injections of such commonly used drugs as eserine, arecoline, yohimbin, phenol, chloral, ether, chloroform, morphine, veronal, caffeine, pilocarpine, and many others. By means of intra-arterial injections of these popular drugs in different

doses, and the phenomena brought about by their use in this fashion, the author throws light on actions and toxicology which to a considerable extent upsets popular notions.

The book is scientific, theoretical and practical, and is adapted to experimental as well as to clinical medicine. It provides simple methods of investigation for research and new therapeutic ideas for the clinician. No veterinarian who reads French will be disappointed in it.

* * * *

Medical Jurisprudence. This is not the title of a book, but the subject of a special issue (October, 1935) of a magazine devoted to a digest of law reviews—*Current Legal Thought,* Volume II, No. 1, published by Current Legal Thought, Inc., New York, N. Y. The special issue contains 150 pages; price $1.50 in paper binding, $2.00 in cloth.

This comprehensive volume is a survey in abstract form of the more important contributions to this essential discipline during the past two years. It comprises two major divisions: (1) The law covering doctors and the practice of medicine; and (2) the branches of the medical sciences essential to law administration and the fundamental legal concepts applied to the medical sciences in their utilization by law.

Part one considers the problems of licensure; the nature of medical practice; the right and duties of the physician; his relation to patient, colleagues and the state; the law of malpractice and the defenses thereto; his responsibility under the civil and criminal law and finally, the principal rules of the procedure of admitting testimony into evidence.

This portion of the volume is almost directly applicable to veterinary medicine. Part two concerns the veterinary practitioner much less than the physician.

Being already in abstract form, part one, the part applicable to veterinary medicine, does not lend itself to further abstracting or review within the space available, but the following quotations selected almost at random indicate the nature of the discussions.

"No person has a natural or absolute right to practice medicine or surgery. It is a right granted on condition. Under its police power, it is well established that the state may regulate, within reasonable bounds, for the protection of the public health, the practice of either, by defining the qualifications which one must possess before being admitted to practice, and, to make these regulations effective, to require the one intending to engage in the practice to possess, before engaging therein, a certificate showing that he possesses the required qualifications. . . ."

"The state in the exercise of the inherent police power of the sovereign may place such restrictions on a license as may be necessary for the welfare and safety of society. A statute that regulates the right to practice medicine, but leaves the field open to all who possess the prescribed qualifications, does not abridge the privileges or immunities of citizens."

"A license to practice medicine is not a contract and does not give the licensee a right to continue in the practice in the future unrestricted; such license may be revoked for good cause, and such revocation is not a taking of property without due process of law. The statutes are not unjustly discriminatory and do not deny the defendant the equal protection of the laws so as to render them void. . . ."

"Equity—Injunction Against Unauthorized Veterinary Practice. — Two veterinary surgeons brought suit in a Virginia court to restrain from further practice of the profession one who had obtained his license without taking the examination required by statute. *Held:* No cause of action stated. *Drummond v. Rowe,* 156 S. E. 442 (Va. 1931).

"This seems to be the first American case to reach a court of final jurisdiction in which members of a licensed profession have sought to cut off competition of an unlicensed practitioner by means of an injunction. But an injuction was denied in a similar case by an Ohio Circuit Court. In a South African case, however, the court reached a contrary result, holding that traders who carried on their business in contravention of the statute should be enjoined at the instance of rival traders who claimed that their business was being hurt by the illegal competition."

* * * *

Proceedings of the Kansas Veterinary Medical Association (1935), compiled by the Secretary, Dr. Charles W. Bower, Topeka; 65 pages.

This enterprising association again this year, as for a number of years past, has published a complete report of its annual meeting. While naturally such a report contains much of interest only to members of the association, it contains also the scientific papers presented at the meeting, which are of general interest. An improvement on former mimeographed reports, this one is printed. It is distributed without charge to members of the association.

SHIPPERS OF STOCK AND POULTRY MEDICINES FINED

Federal Courts in the last month have fined five manufacturers of veterinary medicines for violations of the Food and Drugs Act, the Food and Drug Administration reports. Products involved in the actions were remedies for various ailments and parasites of poultry, hogs and other farm animals.

Ten in One

Glen France, trading as the France Drug Co., Forest City, Mo., was fined $220. He had shipped in interstate commerce his "Ten-in-One", composed of alcohol, water, carbolic acid and potassium chlorate. They were offered as a treatment for eye and nostril dicharges, fever, bowel infections, flu, gapes, colds, roup and other bronchial diseases of poultry. These claims, the government alleged, promised more than could be expected of the mixture, which was to be given in the feed and drinking water. According to Dr. H. E. Moskey, veterinarian of the Administration, no medicine given in this manner would have effect against conditions enumerated in the circulars and labeling for these products. The articles were further misbranded because the label did not declare the presence of alcohol, as required by law.

Despite the fact that a dozen poultry raisers and one veterinarian testifying for the defense claimed that a combination of ingredients such as found in "Ten-in-One" was capable of preventing and curing several poultry diseases, the Court concluded in view of the government's analysis and expert veterinary testimony as to the worthlessness of the mixture, that the manufacturer had been wanton and reckless in making the claims to which objection was taken. The Court stated it was satisfied that France made the claims without regard to their truth or falsity, and that the government had shown by a preponderance of the best evidence obtainable that the product could not prevent or cure those conditions.

Walnut Grove Hog Conditioner

In Des Moines, Iowa, the Walnut Grove Products Company entered no contest to charges of violating the law in the interstate shipment of "Walnut Grove Hog Conditioner," and was fined $50. The low fine was assessed after defendant assured the Court that manufacture had been stopped. The claims admitted to be fraudulent included those for the treatment of intestinal and digestive disorders, worms, white scours, flu and necrotic enteritis ("necro") in hogs and pigs. The product, consisting principally of Glauber's salts with sulphur, charcoal, linseed meal, and traces of sodium, calcium, potassium, copper and iron salts, was represented also as an intestinal antiseptic. Doctor Moskey pointed out that no product may truthfully be called an intestinal antiseptic, as the dilutions inescapably effected in the system render all safe products inert against bacteria. The only effect logically following dosage with "Walnut Grove Hog Conditioner," is a laxative one.

Old Homestead Stock Powder

Leo Vincent Hyde, another Iowan, was also fined $50, the Administration reports. Trading as the Hyde Chemical Co., Shenandoah, Iowa, he had shipped a consignment of "Old Homestead Stock Powder" which was held to be misbranded. This powder, differing from the Walnut Grove product principally in the use of American wormseed instead of linseed meal, was labeled as a treatment for gas and fever in the stomach, cattle bloat, and worms. The manufacturer also claimed that the medicine would produce more digestive fluid, keep the stomach strong, healthy and performing its proper duties, and hold the standard of milk up to average. According to reliable veterinary opinion, none of these claims can truthfully be made for a product whose principal effect is laxative.

Cox-Cis

Courts in other localities are similarly active against frauds upon the farmer and stockraiser in the sale of veterinary medicines. October 19, the Federal Court at Philadelphia fined the Kloister Laboratories (Jack Amram and George Klinefelter) $50. The laboratories had shipped from Ephrata, Pa., several lots of "Cox-Cis," offered as a treatment for coccidiosis (bloody diarrhea in chicks) and all forms of intestinal intoxication and infection. The article was 98% limestone and the remainder beta-naphthol.

Korum

Isaiah D. Russell, trading as the I. D. Russell Co., Kansas City, Mo., was fined $25 on his plea of guilty to having shipped "Korum," a medicine claimed to be of benefit in cholera, coccidiosis, chicken pox, roup, diarrhea and most of the common diseases of poultry. The product was a weak solution of a nitrate, table salt, Epsom salts, potassium dichlorate and potassium dichromate.

Stock Feeds

Stock feeds likewise were the object of governmental attention. The Washburn-Crosby Co., Kansas City, Mo., was fined $50 on charges of having shipped wheat gray shorts and screenings containing less protein than claimed on the labels. For a similar violation in two shipments of alfalfa meal, the Asa Strait & Son Milling Co., Nashville, Mich., was fined $100.

Seizures during October for violations in this field included "Pep Stock Tonic," a mixture of laxatives and minerals fraudulently labeled as a treatment for worms in chickens and hogs, for hog cholera, and as a blood purifier and liver cleanser for stock and poultry; and two consignments totaling 260 sacks of feeds, both containing materially less protein than claimed by the labels.

STALLION PULLING CONTEST

The stallion pulling contest held at Lincoln Fields, Illinois, October 12, 1935, under the auspices of the Horse and Mule Association of America, was an unqualified success. Stallions from five states were entered in the contest and all showed remarkable qualities of strength, stamina and docility.

It was the first time that draft stallions have ever pulled in such a contest according to Wayne Dinsmore, secretary of the Horse and Mule Association of America, and the first time that veterinary certificates of soundness, freedom from disease and capacity to breed have ever been required for registered stock before they could compete. It proved, according to Dinsmore, that "it is practical to break, train and work stallions for such contests; it is important to break and train them early in their career, and it is worth while to work and train them continuously for service."

Scenes at the First National Stallion Contest, Crete, Ill., Oct. 12, 1935. Above: Modeste Farceur, three-year-old, sorrel, Belgian stallion (No. 6), owned by Arlo Gettinger, Portland, Ind. Below: Dynamometer used to measure the pull in the contest.

Most of the owners and trainers present expressed themselves as surprised and more than satisfied with the practical results obtained by breaking and "working" their stallion colts as two-year-olds or three-year-olds. Most drivers found that their stallions became more docile and easy to handle as they were given daily work, steady association with other horses, and pulling loads enough to try their mettle and test their high spirits. These principles have been followed for centuries in France where stallions have always customarily been worked daily with other horses, and without any of the trouble that many stallioneers here anticipate.

ADD TO THE HORRORS OF WAR

Dr. Eugenda Yohannes of Addis Ababa, Ethiopia, writes that he has failed to receive his copy of VETERINARY MEDICINE during recent months.

ANTHRAX 1900 YEARS AGO

The bull which to the yoke was bred to bow
(Studious of tillage and the crooked plough),
Falls down and dies; and dying, spews a flood
Of foamy madness, mixed with clotted blood.
—*Virgil.*

ILLINOIS MEETING

The next annual meeting of the Illinois State Veterinary Medical Association will be held at the Palmer House, Chicago, February 5-7, 1936. The program for the last day of the meeting will be a clinic and will be carried out at the Live Stock Pavilion of the Union Stock Yards.

KANSAS MEETING IN JANUARY

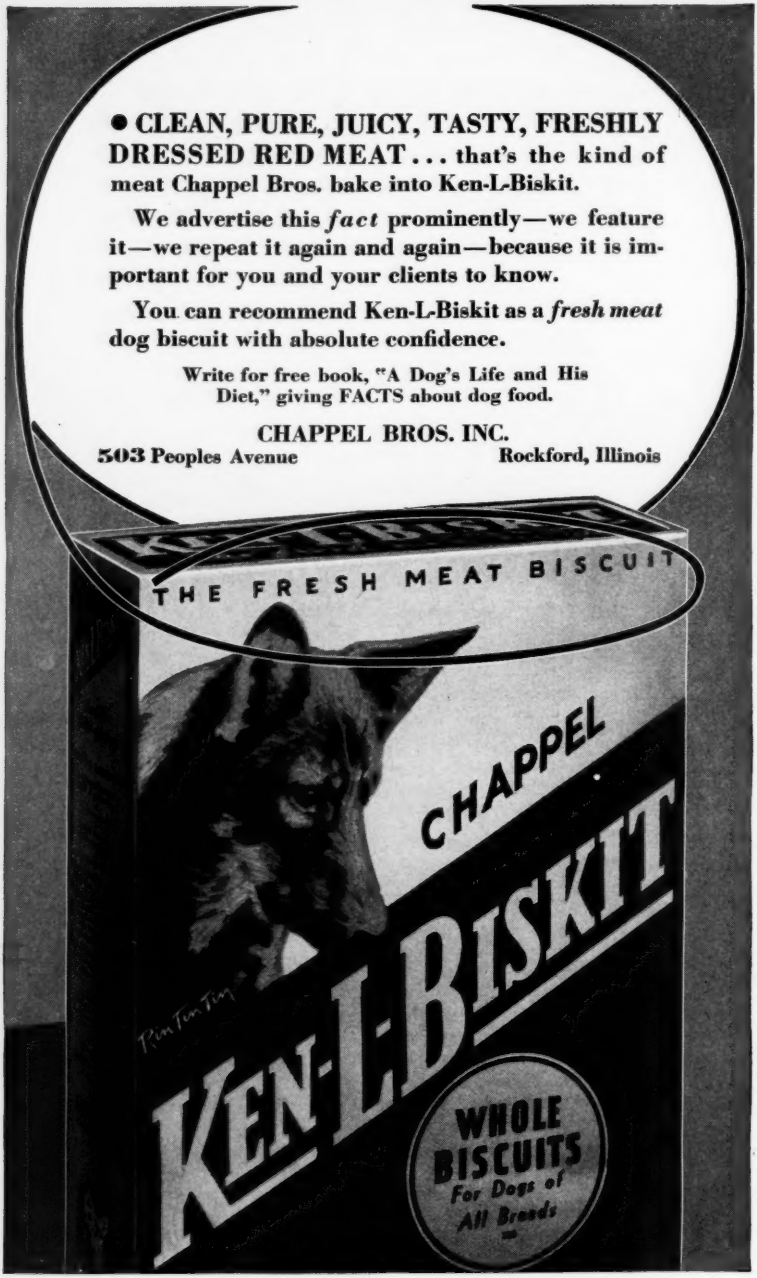
The 1936 annual meeting of the Kansas Veterinary Medical Association will be held at Manhattan, January 14-15.

ILLINOIS VETERINARIANS OF FIFTY YEARS AGO

A group of veterinarians met in Chicago, May 22, 1883, and organized the Illinois State Veterinary Medical Association. The report says that: "A large number of veterinary surgeons were present." The officers chosen for the new association were: A. H. Baker, Chicago, president; Wm. Sheppard, Ottawa, first vice president; I. J. Miles, Chicago, second vice president; J. D. Tuthill, Charleston, third vice president; Jos. Hughes, Chicago, recording secretary; John F. Ryan, Chicago, corresponding secretary; W. L. Williams, Bloomington, treasurer; and Wm. Sheppard, Ottawa, R. J. Withers, Chicago, and N. H. Paaren, Chicago, board of censors. Of the foregoing, only W. L. Williams, now of Ithaca, New York, survives.

AN OLD DISTRICT VETERINARY ASSOCIATION

The 31st annual meeting of the Mississippi Valley Veterinary Association was held at Galesburg, Illinois, November 21, 1935. The feature of the program was an address by Ashe Lockhart, Kansas City, on "Intravenous Injections of Blood." J. J. Lintner of Chicago, in charge of the Bang's disease control project for the B. A. I., explained that work. Others contributing to the program were: O. B. Gray, Williamsfield; W. M. Atkins, Merrill, Iowa; W. A. Warnock, Aledo; Glen D. Grogan, Aurora; C. W. Lantis, Coatsburg; E. R. Kennedy, Moline; F. E. Brown, Blandinsville, and L. A. Gray, Bushnell.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MICHIGAN-OHIO MEETING

The Michigan-Ohio Veterinary Medical Association met in Blissfield, Michigan, October 25, 1935. The program included talks by A. J. Kline, Wauseon, Ohio, on the castration of cryptorchid horses, and by Harry A. Hoopes, LaRue, Ohio, on 20 years' experience with commercial dog kennels.

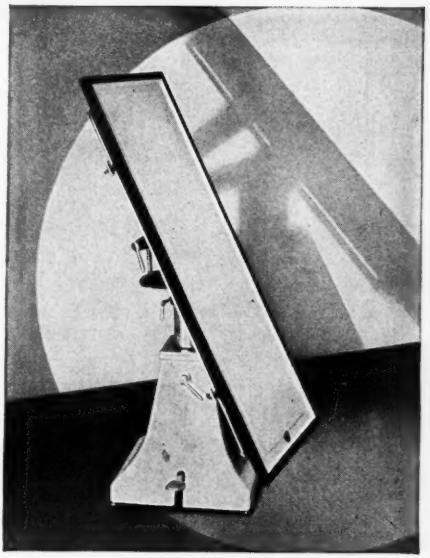
Mr. Elmer A. Beamer, Blissfield, Michigan, a real "dirt" farmer and president of the Michigan Livestock Exchange, gave a very excellent address pertaining to agriculture and its relation to the veterinary profession.

B. J. Killham, East Lansing, outlined the work which the W. K. Kellogg Foundation is doing in the way of a community health program.

There were 26 veterinarians in attendance. J. W. Marshall, Genoa, Ohio, was elected president; A. J. Kline, Wauseon, Ohio, vice-president; and E. C. W. Schubel, Blissfield, Michigan, secretary-treasurer.

* * * *

Monarch, 10,386, the most famous Percheron stallion of Western Canada, died at Brandon, Manitoba, August 19th as a result of injuries received in a tornado there August 10th. Monarch was imported from the United States as a two-year-old 17 years ago. He had won more than 40 grand championships and hundreds of other prizes. His get have won more ribbons than those of any other Canadian sire.



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DAIRYMEN NOT TO INCREASE HERDS

There will be no marked increase in number of milk cows on farms over the next two years, but milk production is expected to increase in response to better feed conditions, according to the annual outlook report of the Bureau of Agricultural Economics.

Receipts of milk and cream indicate the decline in city consumption of fresh milk and cream is probably past, and with further improvement in business and in consumer incomes, city consumption probably will increase. Butter prices also will probably rise in relation to other commodities.

The number of milk cows increased steadily from early 1928 until the spring of 1934 when drought and the general shortage of feed caused a decline. On January 1, 1928, there were 22,129,000 milk cows, and a year later there were 26,185,000. On January 1, 1935, there were 25,100,000, and on January 1 next, there will be about 24,500,000.

The growth of population during the next year or two, it is expected, will be proportionately greater than the increase in number of milk cows. This will tend to make conditions slightly more favorable for dairying.

ARMY VETERINARY SERVICE

Major Nathan M. Neate, now sick at Walter Reed General Hospital, Army Medical Center, Washington, D. C., is relieved from further assignment and station at the San Francisco port of embarkation, Fort Mason, Calif., is assigned to station at Army Medical Center, Washington, D. C., and will report for duty accordingly.

First Lt. Velmer W. McGinnis is relieved from further assignment and station at Fort Des Moines, Iowa, and will proceed to Ft. Leavenworth, Kans., for duty.

First Lt. Lloyd C. Tekse is relieved from further assignment and station at Ft. Snelling, Minn., effective on or about November 20, 1935, will then proceed to Ft. Francis E. Warren, Wyo., and

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pointment in the Veterinary section of the Officers' Reserve Corps are announced by the War Department.

All future original appointments in the lowest grade of the Veterinary Corps Reserve will be made in the grade of first lieutenant.

All second lieutenants of the Veterinary Corps Reserve in a status of eligibility for assignment, active duty, and promotion in peace time, will be tendered new appointments in the grade of first lieutenant upon the submission of a satisfactory report of physical examination.

Veterinary Corps Reserve officers appointed first lieutenants will be credited with all their service as second lieutenants, Veterinary Corps Reserve, in computing the minimum time in grade for promotion to the grade of captain under the

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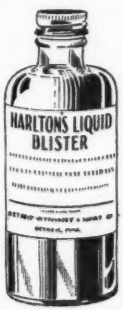

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The Story of Dog Distemper

Distemper was the scourge that wiped out entire kennels where for years, strains had been zealously guarded—until Laidlaw and Dunkin in 1928 discovered the cause—a filterable virus.

The British Field raised a fund and enlisted the aid of the British Research Council. The money provided for the painstaking experiments of Laidlaw and Dunkin. Innumerable difficulties were surmounted, the reward being the discovery that a killed tissue vaccine protected dogs against a fatal dose of distemper virus and established complete immunity.

Not only did the Vaccine and Virus prevent distemper in young dogs but early administration of serum aborted incipient cases.

Early in 1929, Dr. A. Eichhorn, Director of the Veterinary Department, Lederle Laboratories, Inc., New York, was authorized and commissioned by the American Distemper Committee of which the late Mr. Charles H. Tyler of Boston, Massachusetts, was Secretary-Treasurer, to proceed to London and there study the work of the Distemper Research Council with special reference to the method of preventing dog distemper.

After several months' preliminary work of an investigational nature, the Lederle Laboratories confirmed the findings of the English workers, introduced and inaugurated the distribution of the Laidlaw-Dunkin Distemper Preventive in this and adjoining countries.

A prominent investigator in an eastern Medical College has employed the procedure on between 700 and 800 puppies three months of age or

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